



## Emerging Futures for São Tomé & Príncipe's International Airport Campus

UP 598 Master's Project . Summer - Fall 2007 . Advisor: Dr. Stacy Harwood

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## ABSTRACT

São Tomé and Príncipe has recently reached the completion point for the United Nation's Highly Indebted and Poor Countries (HIPC) program and is now looking to develop a sustainable and prosperous economy (International Monetary Fund, 2007). However, the existing international airport is failing to meet the safety, security, and capacity requirements to further the country's economic development. Construction of an airport security fence is underway that will cutoff several thousand residents from the water sources and will redirect routes to the markets of São Tomé. This Master's project utilizes scenario planning to explore possible futures for the expansion of São Tomé and Príncipe's international airport. The scenario development process is intended to facilitate dialogue within the country about the future by which policy and development decisions can be made. A wide range of topics such as environment, history, culture, economy, social structure, land use, domestic policy, and infrastructure were studied in order to make educated projections. Potential benefits, dangers, and conflicts between the issues were considered in order to design planning scenarios that present both positive and negative futures. The result was four primary scenarios for the international airport and surrounding campus that explore opportunities and externalities inherent in such a project with broad and drastic impacts. The representative scenarios included in this final report demonstrate a broad range of alternative futures such as: dramatic expansion, no expansion, or conservative expansion of the airport. Each of the scenarios is presented through various means to describe the possible future including: written analysis, story telling (narratives), sketches, mapping, and photo vignettes. This report is intended to stimulate discussion regarding the future of São Tomé and Príncipe.

## UNIVERSITY PROJECT BACKGROUND

The Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign worked on this project for the country of São Tomé and Príncipe, in conjunction with the Graduate School of Library and Information Science (GSLIS) and the East St. Louis Action Research Project (ESLARP).

Paul Adams, the director of Prairenet (a unit of GSLIS), installs computer labs at non-profit organizations that serve disadvantaged communities throughout Illinois such as East St. Louis, Illinois. As a student at the University of Illinois, Mr. Jorge Coelho, the current São Tomé Airport Director, received a degree from GSLIS and worked for ESLARP while studying at the university.

In February 2007 and again in July 2007, Prairenet sent a team to São Tomé to set up computer labs for internet access at schools and non-profit organizations. In addition, the team has attempted to improve public access by setting up a wireless network throughout the island in remote plantations and education computer labs.

In the spring of 2007, two Architecture Master's students designed a community center and the airport terminal for their master's project. One of the students, Brett Bridgeland, returned to São Tomé in the summer to revise the plans and designs for Mr. Jorge Coelho.

On the July 2007 trip, the planning team traveled to STP to develop scenarios for planning purposes at the request of Mr. Jorge Coelho, director of the airport. The planning team conducted interviews and site visits as part of their research. The GSLIS team set up computer labs, worked on a wireless computer network, and provided computer support as well as worked with the national library to set up a catalog system.

GSLIS is planning on continuing the build out of wireless nodes to blanket the island in a redundant network to enable communication and education portals to exist throughout the country.

## **ACKNOWLEDGEMENTS**

Completion of this report was a rewarding task. The final product would not have come to fruition without the continuous dedication and hard work of the team members and helpful guidance of Dr. Stacy Harwood, our advisor and professor. Her patience, feedback, and recommendations were undeniably valuable in completing this report. A special thanks goes out to Mr. Paul Adams of Prairenet, Ms. Vicki Eddings of ESLARP, and Mr. Jorge Coelho, São Tomé Airport Director. We would also like to thank the College of Fine and Applied Arts and the East St. Louis Action Research Project for their financial contributions, without which our travel to São Tomé would not have been possible. Lastly, to all UP 478 students and guest faculty lecturers, thank you so much for your contributions to this work and a summer full of extraordinary memories.

## **DISCLAIMER**

The views expressed in this Master's Workshop Report are those of the authors and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

This document is meant to be a tool to stimulate discussion and should not be construed to guarantee any stated or implied outcomes. The project was limited by the short time frame in STP and unavoidable biases coming from cultural, social, economic, and language differences (see Research Methods Concerns: page 7 for further discussion).

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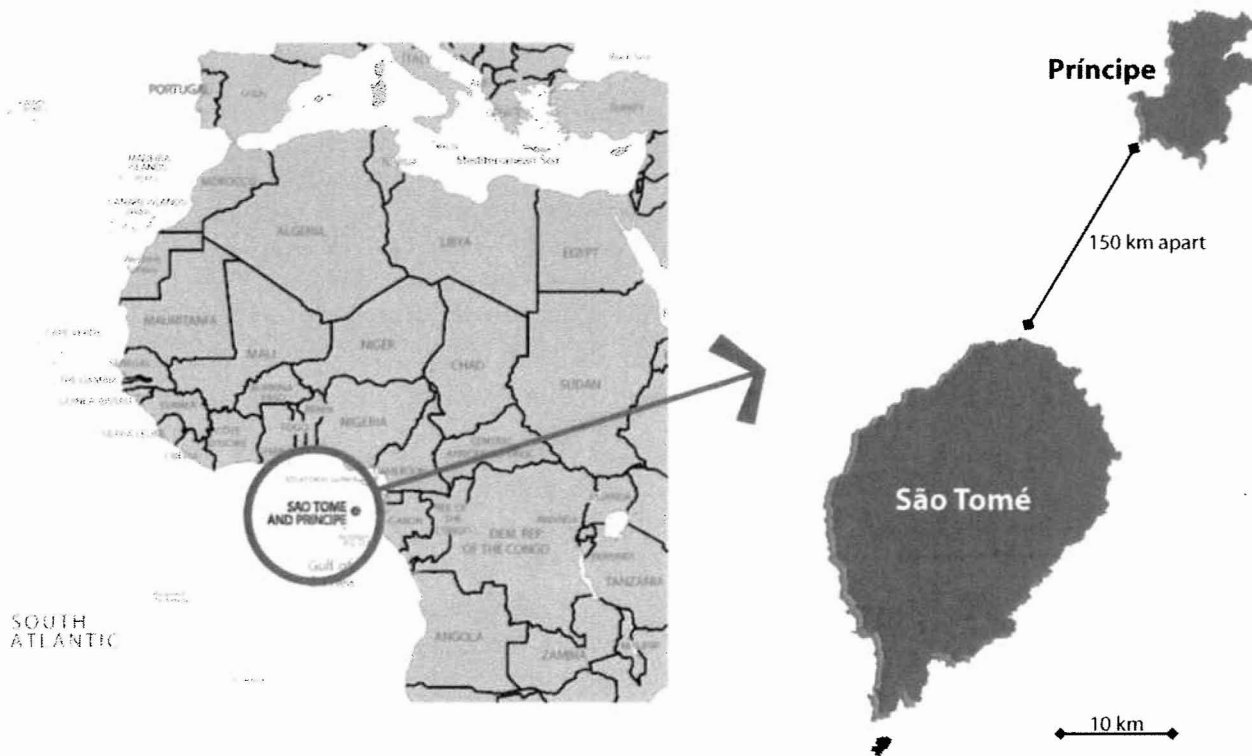
# I. INTRODUCTION

## I. Introduction

- II. Framework
- III. Approach
- IV. Findings
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## BACKGROUND

The Democratic Republic of São Tomé and Príncipe (hereafter referred to as STP), located in the Gulf of Guinea just west of the African continent, is a developing nation-state. With an area just over 1,000 square kilometers, it is the smallest nation in Africa, and it is made up of two volcanic islands approximately 150 km apart (See Figure 1). Located on the equator, the climate is tropical with wet and dry seasons. The estimated 180,000 people on the islands are mixed-African and Portuguese-African in heritage and their culture stems from Luso-Africa. They have a literacy rate of 68 percent and education is mandatory up to secondary level. Average life expectancy is 64 years old. With a per capita of GDP of \$424, it is not only one of the poorest countries of Africa, but also the world (U.S. Department of State 2006). Natural resources include agricultural products like cocoa, coconuts, coffee, bananas, and fish. A little less than half of the available land is cultivated and the country is currently exploring petroleum in the Gulf of Guinea. STP has gained international recognition for its unique and ecologically diverse forest as well as its marine life.



MAP SOURCE: U.S. CENTRAL INTELLIGENCE AGENCY, THE WORLD FACTBOOK (2007)

Figure 1: Location Map of São Tomé and Príncipe. In the Gulf of Guinea, approximately 150 kilometers west of Gabon (west Africa).

## HISTORY

STP was discovered uninhabited around 1470 by Portugal. It was colonized in 1493 and served as a stopping station for ships carrying slaves to the New World. The economy attempted to diversify in 1522 with the beginning of sugar production on plantations, but it lasted only until 1600. The slave trade continued to dominate the economy during the colonial period. In the 1800s, cocoa and coffee were introduced, and by 1908, it was the world's largest cocoa producer. The Portuguese ran plantations called roças with slaves to produce the crops. While Portugal officially abolished slavery on the island in 1876, the plantations often replaced the institution of slavery with contract labor, which closely resembled the harsh working conditions of slavery. In 1975, the island received its independence from Portugal and the country became a socialist state; aligning itself with Cuba, Soviet Union, and Angola. The plantation owners left the country and the control passed to various state-owned agricultural enterprises. This loss of the Portuguese middle class resulted in a collapse of traditional



business networks that negatively impacted the agriculture based economy and increased poverty. In 1991, the country switched from a socialist to a representative democracy with several political parties, and the plantations became privatized or broken into independent farms. The efforts to redistribute plantation land further decreased cocoa production. Declines in the international price of cocoa hit the economy hard, and the country increasingly relied on foreign assistance. Today, Portugal remains one of STP's major trading partners, particularly as a source of imports. STP's imports food, manufactured articles, machinery, and transportation equipment.



PHOTO BY JAY A. BIESZKE

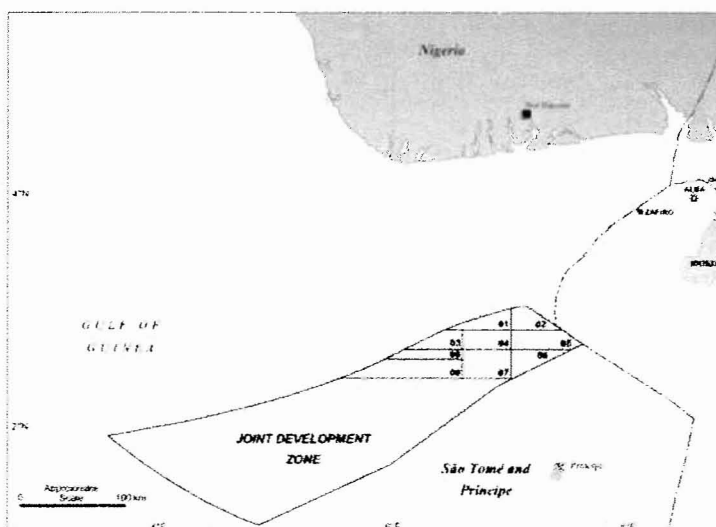
**Figure 2: Abandoned plantation home at Água Izé.** A once thriving cocoa plantation, this run-down estate is located on the eastern coast of the island of São Tomé.

## RECENT DEVELOPMENTS

In 2001, STP and Nigeria reached an agreement on joint exploration for petroleum in waters claimed by both countries. The agreement states that STP receives 40 percent and Nigeria 60 percent of the profits (Introduction to the JDZ 2007). In April 2003, the first nine blocks of 27 were sold off for oil exploration within the Joint Development Zone (JDZ) (See Figure 2). With each block sold for approximately \$30 million, STP received a little over \$100 million (twice the size of its annual budget). On July 16, 2003, a bloodless coup d'état occurred on STP. Coup leaders felt there was a combination of unequal distribution of the new wealth garnered from oil fees and poor decisions being made by those in-office. In addition, the military was living in poor conditions, being paid little wages, and their equipment was outdated.

Today, agriculture continues to be the primary industry on the island with cocoa as the dominant crop (95 percent of exports). Besides agriculture, the main economic activities include fishing and small industrial processing centers that produce basic consumer goods and agricultural products. Within the decline of the plantations, STP's government has been reliant on foreign assistance from various donors, including the UN Development Program, the World Bank, the European Union (EU), Portugal, Taiwan, and the African Development Bank. In June 2007, the \$300 million debt owed to the World Bank was dissolved and STP was taken off the Heavily Indebted Poor Countries (HIPC) list.

In September 2007, the government was expected to unveil a new tourism plan for the scenic islands (actual release unconfirmed by the project team). Two new resorts are currently being built for future tourists. Due to the unique fauna and flora and the preservation of a national park on the southwestern part of the island, the potential increase of eco-tourism has the government improving the tourist industry infrastructure.



SOURCE: NIGERIA SAO TOMÉ & PRÍNCIPE JOINT DEVELOPMENT AUTHORITY WEBSITE

**Figure 3: Joint Development Zone.** This joint petroleum exploration area was the result of 1999 and 2000 negotiations between Nigeria and São Tomé.



## II. FRAMEWORK

### PROJECT BACKGROUND

STP's airport director, Mr. Jorge Coelho, a graduate of University of Illinois, requested design and planning technical assistance from the University's Architecture and Urban Planning Departments. As the director of the airport contractor, Empresa Nacional de Aeroporto, Segurança Aérea (ENASA), he works by government appointment to manage daily operations of the airport. Upon his appointment in 2006, he realized the airport needed to be upgraded to meet International Civil Aviation Organization (ICAO) standards. He also wanted to improve current facility deficiencies and expand to accommodate future air travel needs. While unsure about the best use of available resources to meet the future demand, he sought to develop a plan with the help of the University of Illinois. He first contacted Paul Adams, Director of Prairienet, who is also an active faculty member working with the East St. Louis Action Research Project (ESLARP).

In the summer of 2007, Dr. Stacy Harwood, who also works with ESLARP formed a planning team and community development workshop at the University of Illinois to develop potential scenarios for the the airport campus and how those scenarios would affect the country. Because the planning team was not directly embedded in the island's politics, it was a chance to reframe alternative or potentially fresh perspectives about possible futures on the island. They planned a trip to the island to collect data, experience the culture, and see first-hand the airport site and delve deeper into the land-use conflicts that have developed.

To begin, the team developed a problem statement that guided the process of the project:

*The project is to develop and propose planning scenarios for the international airport and surrounding airport campus that explore opportunities and constraints of a developing nation-state.*

While STP is one of the world's smallest and poorest countries, future airport campus improvements will likely have broad effects on the entire nation due to its small size. To better understand STP, a wide range of topics such as environment, history, culture, economy, social structure, land use, domestic policy, and infrastructure had to be studied in order to make educated decisions. Potential benefits, dangers, and conflicts between these issues were analyzed in order to design planning scenarios that would be most beneficial to the development of this nation. With rising tourism interest, and a developing oil industry in the Gulf of Guinea, the growth in these sectors will create a need for increased airport capacity. The nation must now address the economic needs and desires of the country while balancing the protection of its environmental resources.



PHOTO: JOEL VANESSEN

**Figure 4: Old Air-Traffic Control Tower.** The old tower and hangars located at the São Tomé International Airport. This facility is currently being used for security personnel.

One of the client's primary concerns is the proximity of three fishing villages (Praia Cruz, Praia Gamboa, and Praia Loxinga) to the airport causing immediate security and safety problems. This adjacency will create a land-use conflict when the airport expands. Balancing the issues of accommodating the citizens while improving infrastructure necessary for the STP's development was a major component of the team's work.

Construction at the airport has already begun, including construction of a security fence, runway improvements, and the planned drilling of a well in the adjacent fishing village. As the airport continues to develop, careful

research and analysis is needed to understand the impact that new developments at the airport will have on the islands of STP and how change on the island might affect the airport.

The scenario planning takes into account many externalities inherent in such a project with broad and drastic impacts. First, the airport has and will have many effects on the city of São Tomé and the entire island. The airport is the primary mode of passenger transportation between São Tomé and the rest of the world. If the airport physically expands, the displacement of village residents will have several spillover effects to the population and to the economy. Additionally, São Tomé will be affected by increased air traffic if the oil industry opens opportunities for foreign investment and development. With this increased traffic from the international airport, infrastructure and service needs will increase dramatically over the coming years.

Secondly, decisions made and actions taken by other actors will affect the airport. Currently, STP is dependant upon international financial donors for major improvements. Actions taken by these donors may affect how and when the airport expands and changes. Developers seeking to capitalize on increased traffic from the oil industry and from tourism will affect the development of and traffic around the airport campus. Public policy and infrastructure developments such as a deep water port will also influence the needs and possibilities for the airport.

Many other externalities have been analyzed during the scenario building. The project took into consideration the other areas and effects beyond the immediate scope.

The expansion of the airport will also increase access to and from STP for both people and goods throughout the world. The nature of tourism, trade, education, immigration and emigration will all be affected requiring a shift in their administrative logic. The potential of São Tomé to be a regional air transportation hub will have a definite impact on the island and its inhabitants. Whether that impact is a net gain, zero sum, or a net loss to the nation was another aspect of this project.

Geopolitical concerns are important in considering the expansion of the airport and development of the airport campus. STP is not only in a convenient travel and trade hub, but is also in a valuable strategic military and political location. Increased global access and trade could serve to strengthen diplomatic and economic relations with other lusophone nations, former socialist allies, and West Africa with the potential to open diplomatic and economic lines with other nations as well. Appropriate scenarios will address its sustainable and productive expansion into the regional and global political economy.



PHOTO: BRIDGETTE RICHARDSON

**Figure 5: Crossing the runway in search of water.** São Tomé International Airport, Villagers carry water from one side of the runway back to their homes.



PHOTO: BRIDGETTE RICHARDSON

**Figure 6: Construction of a perimeter fence at the International Airport.** Military personnel constructing security fence along the north perimeter. The villages (to the left) will be cutoff from their direct route crossing the runway.

### III. APPROACH

I. Introduction

II. Framework

III. Approach

IV. Findings

V. Scenarios

VI. Conclusion

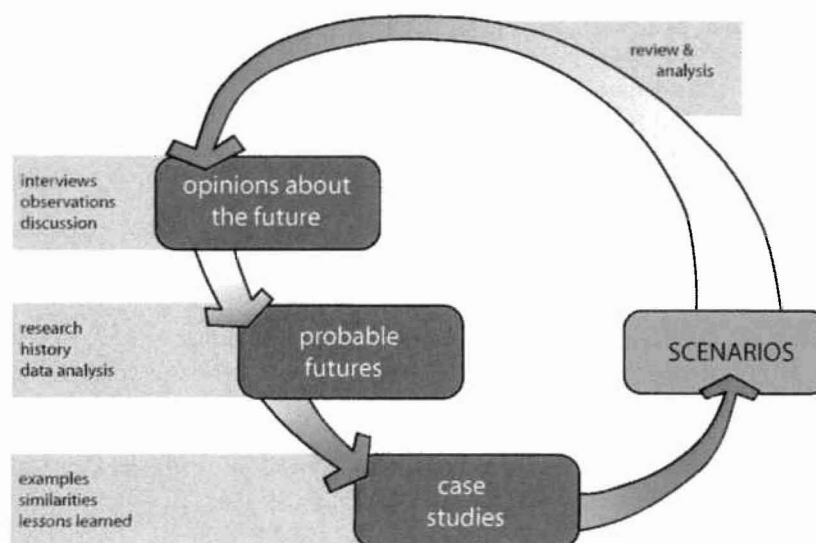
VII. Appendix

#### SCENARIO-BUILDING FUNDAMENTALS

An understanding of the fundamentals of scenario-building is essential. This research tool, as used by planners, helps key stakeholders conceptualize outcomes of development decisions through scenarios. In the words of Uri Avin, "Scenarios are a set of reasonably plausible, but structurally different futures." (2001, 22) His article "Getting Scenario-Building Right" expresses the key question in scenario planning as "What do you think might happen? This question requires people to uncover and cope with forces that are driving change in their environment." (Avin 2001, 22) These driving forces are often critical uncertainties. By revealing these elements, this approach facilitates dialogue and storytelling about future possibilities. "Scenarios must reflect an integrated, consistent storyline—an explanation of how an underlying reality can unfold under feasible circumstances. Plausible alternatives demand respect and objective analysis." (Avin 2001, 22) "Scenarios are stories that give meaning to events and similarly, a good scenario asks people to suspend their disbelief in its stories long enough to appreciate their impact. Storytelling, expressed through a written narrative, is powerful and helps people cope with complex issues. Overall, scenarios are not about predicting the future; rather, they are about predicting futures in the present." (Schwartz 1991, 38-41)

The scenarios presented in this document deal with multiple actors and account for complex issues within the country of São Tomé and Príncipe (STP). Some of these actors include foreign investors/developers, domestic policy-makers, and the country's citizens. In addition, complex and interdependent issues involve economic development, disease eradication, infrastructure improvement, environmental preservation/conservation, and the resulting social impacts of these. The country is dealing with uncertainties influenced by outside forces such as petroleum investment, tourism development, and political relationships.

"Scenarios deal with two worlds, the world of facts and the world of perceptions. They explore for facts but they aim at perceptions inside the heads of decision makers." (Schwartz 1991, 39). In this case, the set of four different planning scenarios are meant to aid those in decision making positions. Stakeholders, including our client, will then be able to facilitate dialogue regarding future planning and development. The scenarios generated for this project will prove useful in determining the desired changes on the island. Using the provided recommendations, decisions can be made emphasizing positive outcomes while mitigating negative outcomes.



**Figure 7: Scenario development as a continual process.** The 'scenarios' included in this report are provided to stimulate discussion regarding STP's future. This project is only the beginning of what is intended to be a continuous process.

#### PRE-TRIP

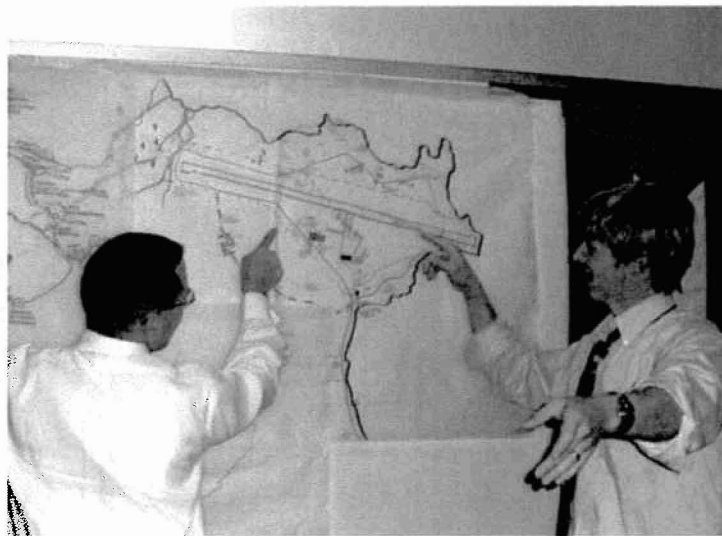
Prior to the site visit in July 2007, "initial" scenarios were formed within a class, UP 478 Community Development Workshop, taught by Dr. Harwood. The class consisted of the Master's team and other workshop students. The initial step was to identify information about STP. Books, internet sources, case studies, maps, graphic illustrations, and guest lecturers (for example Paul Adams, Ken Salo, and Faranak Miraftab) were used to broaden knowledge of the islands. This knowledge was used to identify existing "Givens" and "Uncertainties" for the islands and for STP's international airport. In addition, fundamental "Driving Forces" were identified

both within STP, Western Africa, and globally. Some examples are population growth, increase in tourism, and political stability. To organize the “Givens,” “Uncertainties,” and “Driving Forces” and to analyze the information relevant to the topic, the project team categorized them using a modified STEPE (Social, Technological, Economic, Political, and Environment) approach developed by James Morrison and Thomas Mecca. The team modified the approach by absorbing technological forces into other categories. The final categories were social, economic, political, and environmental.

The second step was to learn the process of scenario planning and apply this to STP and its airport campus. Several “initial” scenarios were hypothesized and drafted for these areas. They were reviewed in a land use charrette where dialogue and design solutions were developed. The collaborative sessions among sub-groups within the class integrated a variety of aptitudes and interests.

The third step before the site visit was to review and identify the lessons learned from similar case studies. The case studies included research about relevant issues including free-trade zones, tourism development, oil extraction, and airport design. These provided examples of positive and negative impacts, demonstrated best practices, and aided in the measurement of the real costs (social, environmental, economic, etc.) associated with potential action.

In preparation for the site visit, the team then compiled a list of potential people to interview, drafted questions for the anticipated interviews, and prepared base maps and aerial photos of STP (see Appendix F for sample questions). Paul Adams also arrived in STP a week early to coordinate the trip by arranging translators, transportation, housing, and logistics needs.



ANGELA STENSON

**Figure 8: Scenario Development Process.** Students involved in this Master's project along with the student in UP 478 conducted research and developed preliminary scenarios.

## DURING THE TRIP

Once the team arrived in STP, information was gathered through personal interviews, site visits, photography, personal observations, and participation in events. Typically, information was gathered during the day through interviews (See Appendix C and D for itinerary and site visit interviews), and the evenings were reserved to discuss the day's events and consolidate notes and comments from various members of the team. The consolidated information was sent through e-mail to Champaign, Illinois where two remaining members of the Master's team used this new information to refine and develop scenarios.

## POST-TRIP

Upon the return of the team from STP, the members debriefed the class and fellow team members on the new information. This included discussion sessions and a photo presentation. Prior information, “Givens” and “Uncertainties”, were reviewed, evaluated, and modified with improved data sources. In addition, the team discussed and refined the four potential scenarios that were developed by those unable to make the trip. Considering research done prior to and during the trip to São Tomé, the team developed an outline for the four scenarios in which the class used within their own teams to develop final workshop presentations. The Master's team provided input and feedback to each of these teams. Once the presentations were completed, the team then refined the studio presentations, compiled information, and developed this final report document of the scenarios.



## RESEARCH METHODS CONCERNS

The team was initially contacted to do this project because of the perception that university students would bring an impartial and fresh perspective to the issues. The research process undertaken in this project and during the trip to STP has limitations due to certain constraints inherent to the project, these include: limited time frame for site visit research, cultural and language barriers, and the struggle to maintain impartiality and objectivity. While these are concerns, the amount of data received was invaluable for the project. These concerns are discussed in order to draw attention to the process limitations and highlight areas for further research.

With limited time on the island (7 days), some key stakeholders could not be interviewed. The logistics of coordinating face to face interviews proved to be difficult. The absence of stakeholders such as representatives from the Department of Infrastructure or local NGOs means our understanding could lack some key opinions and limit the usefulness of our report. It should also be noted though, that access was gained to numerous informative stakeholders. The translator, Elves Reis along with his brother James, both former residents of the fishing villages, diligently aided and assisted the team in gathering data through interviews that ranged from the fishing village residents to an elected representative in the government.

Methodological concerns also relate to the language and cultural barrier between the research team and interviewees. In most of the interviews, the role of translator was crucial to interpret the team's questions correctly in Portuguese and relay informative responses in English. While there was a possibility of meaning being lost in translation, the skill and genuine interest of the translators was extremely helpful in the process.

Another barrier for retaining interview information was the inability to tape record what were often lengthy interviews. Though no exact written transcripts of each interview were produced, the team compensated by having more than one team member take detailed notes at each interview. During the evening sessions, the interview notes were then discussed, compiled, and typed as one observation.



PHOTO: JOEL VANESSEN

**Figure 9: Interview / Discussion at Praia Cruz.** Multiple meetings were held with the village elders at Praia Cruz (located to the north of the International Airport) in order to hear their concerns regarding airport growth.

## EXPECTED OUTCOME

This document's aim is to provide four scenarios, with convincing narratives, that describe a broad range of alternative futures for STP to help direct decision makers' actions towards a desired future. The scenarios include descriptive information, a narrative, driving forces, a forecasted outcome for the airport campus, implications in economic, social, environmental, and political sectors, case studies that support the outcomes, disappearing/emerging futures, and graphic information in a report format. With diverse values and views for the future on the island of STP, this project hopes to facilitate a dialogue of what might happen in the future and act as a tool that stakeholders can use to monitor change occurring on the island.

## IV. FINDINGS

I. Introduction

II. Framework

III. Approach

IV. Findings

V. Scenarios

VI. Conclusion

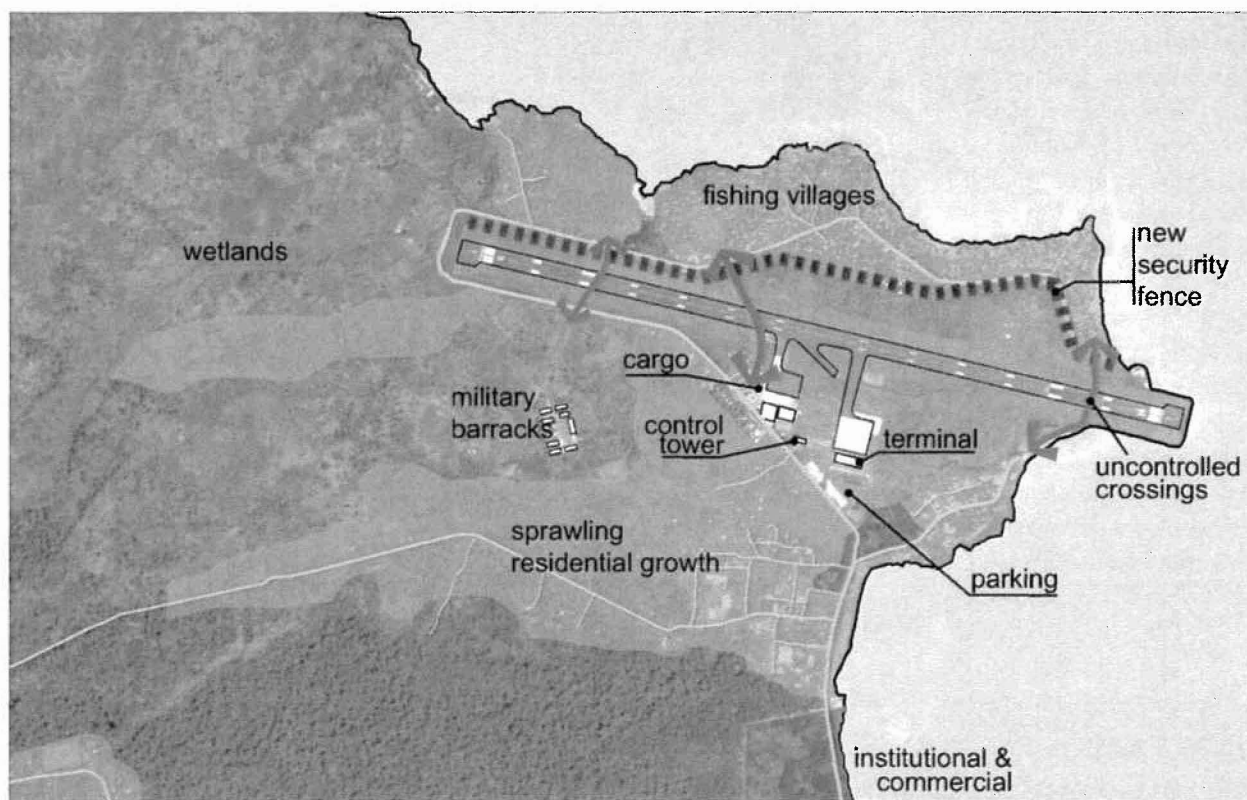
VII. Appendix

The developed scenarios are based on empirical data, fieldwork, and theoretical concepts that reflect the possible outcomes of expansion of the airport on STP. The team found that STP is dealing with a wide range of issues, some common to the contemporary West and others to 21st Century Africa. The following findings apply to the airport campus and the *modified* STEPE.

### AIRPORT CAMPUS CONDITIONS

#### A. Airport

The airport is the primary gateway of travel to STP. With primarily cargo ships arriving, the airport is the main point of entry for the island visitors and is a catalyst for economic growth. In order to be active in the West African region and global markets, it is necessary for STP to have an airport that can meet the increasing demand for air traffic. While the current length of the runway can support the region of West Africa, extensions and improvements to the existing runway are needed for the global market such as tourism or business (Carvalho 2007). It is vital that the airport makes a lasting impression on visitors as they arrive and depart in order to encourage repeat visits. In addition, the airport needs to have a high standard for safety and security.



ORTHOPHOTO SOURCE: GOOGLE EARTH

**Figure 10: Existing Airport Conditions.** The essential conflict is illustrated here with the fishing villages in the north being cut-off from the city of São Tomé to the south.

The operation of the airport has been entrusted to the contractor, ENASA, with oversight by Jorge Coelho. The airport is intended to be self-sufficient with revenue generated by passengers and airspace rights. On July 5, 2007, the government of STP established an independent Terminal Maneuvering Area (TMA) around the island that is estimated to generate \$2 million in revenue per year for aircraft flyover fees (Coelho 2007). This change resulted in the airport transitioning to 24-hour air traffic control operations. The new revenue

is intended to be allocated for the first two years to new equipment within the control tower, radar, and terminal (Lombá 2007). Additional equipment upgrades are to follow in proceeding years. Current ENASA employees have held multiple strikes as a response to the visibility of increased revenue.



PHOTO: ANGELA STENSON

**Figure 11: International Airport air-traffic control tower.** This facility contains all of the operational and primary management functions of the airport.

Funding for any airport expansion is expected to come mainly from foreign investment or foreign aid. The operations and maintenance expenses are to be paid out of revenue generated by the airport itself (Lombá 2007, Coelho 2007). Further revenue streams for operation and maintenance are anticipated to expand the terminal to include more duty free shops, restaurants, rental car desks and lots, banks, lounges, and hotel desks (Carvalho 2007, Coelho 2007). While the current market will not support increasing landing or tie down fees, with improvements of the airport, these are options for the airport in the future to help maintain and operate the airport.

To better understand the capabilities of the airport and improvements needed, a study was awarded by the U.S. Trade and Development Agency (USTDA) in February 2004 (the USTDA also funded a study on the seaport). This report authored by *The LPA Group Incorporated* was considered to insufficiently document structural analysis of the runway landing capabilities (Carvalho 2007). In addition, the LPA report recommended the demolition of many existing structures that only need minor repair to be operational. For a very poor country, the team recommends minimizing capital expenditure by reutilizing existing infrastructure. In 2006, the Airport Director requested the University of Illinois help to design a new terminal and generate airport campus scenarios. In addition, in 2007, the Minister of Infrastructure awarded a \$2 million study to a Portuguese design firm. The government has also received funds from the Taiwanese government to improve the airport to International Civil Aviation Organization (ICAO) standards, which is currently being monitored by STP's Civil Aviation branch. These improvements include resurfacing a portion of the runway, building a concrete wall fence around the runway and drilling a well on the north side of the airport at a fishing village.

Construction of the security fence around the airport is approximately 30 percent complete at the time of our visit in July of 2007. The concrete masonry wall is being constructed by the STP military in order to prevent pedestrians from entering the airport security area and crossing the runway.

Within the next five years, the Airport Director, Jorge Coelho's short term vision for the airport is to have the security fence completed, an addition added to the terminal with commercial operations such as duty free shops, and the restoration of existing facilities to include VIP lounges, security, offices, firefighting, and training center. His consultant (Jose Carvalho) presents a conservative expansion plan that reuses old facilities and does not over-build without a plan to repay prospective capital improvement loans. To further expand the airport and to improve the structure of the runway, a loan through foreign aid or foreign investment would be required.

Within a fifteen (15) year period, the Airport Director's long term vision is to have the runway extended and hardened to international standards, a new terminal and facilities built to the west, and a new training center for airport personnel. This phasing plan anticipates continued operations during construction of the runway to the west.

## B. Fishing Village

On the north side of the airport is a fishing village that has grown to an estimated population of 6,000 to 10,000 people. The fishing villages are actually made up of three villages, Praia Cruz, Praia Gamboa, and Praia Loxinga. A subsistence lifestyle dominates, where fish are caught for food and women sell the extra at the market to purchase staples like vegetables, bananas, and rice. The fish take the men as far out as 10 kilometers using carved out wooden boats with either outboard motors or sails. They also often share their catch with fellow neighborhood villages if it cannot be sold at market.

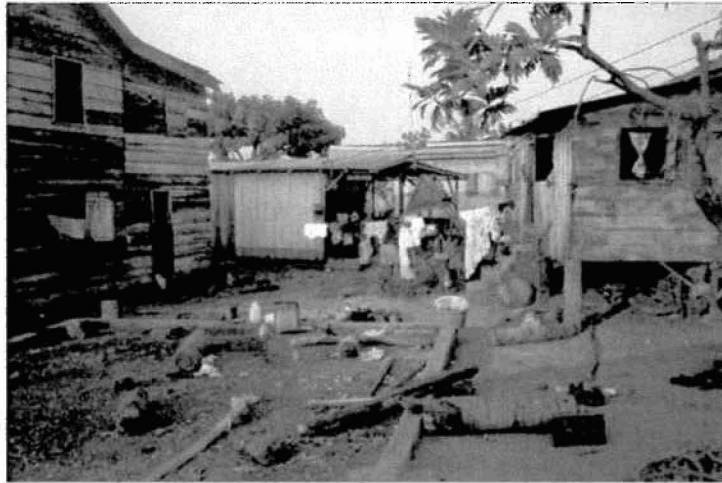


PHOTO: ANGELA STENSON

Figure 12: Typical living conditions in the village of Praia Cruz.

Based on conversations with the village elders, the villagers' lives would be improved if some issues were resolved. In addition, the building of the fence will exaggerate these issues.

- Their water source is on the south side of the airport, forcing them to cross the active runway to retrieve water. While water distribution facilities exist throughout the villages, they have not functioned for many years. Therefore, the proposed well to be drilled will benefit the villages.
- They also cross the runway to gain access to the city center. There is a road leading around the runway, but it takes the villagers all the way around the west side of the airport security area. Since most walk or ride a bike, they simply cut across the active runway to save an estimated 45 minutes.
- Since the elementary school in the Praia Cruz is overflowing, many also cross the runway to attend the second school on the south side of the airport campus in Praia Francesa. If bus service was provided for the children or the village school was expanded, this issue could be resolved.
- Currently, there is no garbage collection or disposal; so waste is disposed along the road north of the airport grounds. A new location will have to be determined since the fence will block this area.
- Sanitary facilities should be improved for health and environmental reasons.
- Overall, the electrical power on the island is unreliable with blackouts occurring often. The villages have no backup generators and thus lack adequate refrigeration for their daily catches.

Although the villagers believe they own the land, it is actually owned by the government and the airport (Coelho 2007, Lima and Conceição 2007). The improvements laid out for the airport will increase pressure for the villages to move from their homes and potentially increase negative feelings toward the government. Villagers expressed a pattern of broken "campaign" promises to improve their situation. There are no incentives for the villagers to move, and further pressure will only increase the distrust they have with the government.



PHOTO: MATTHEW CLAUS

Figure 13: Near the village of Praia Cruz. The morning's catch being loaded into taxis heading to the market.



### C. Residential Area Southeast of Terminal

A neighborhood has developed to the southeast of the terminal that is a mixture of new wealthy and old makeshift homes. This area would be impacted with increased traffic at the airport and would be in close proximity to airport operations. It currently has only residential homes and the second elementary school mentioned above.

### D. Development Area to Southwest of Terminal

Although the airport is trying to restrict growth southwest of the terminal, scattered homes have been built in this area (Lima and Conceição 2007). While again airport property, these homes are in a development area for the proposed expansion of the airport.

## SOCIAL

There are a host of social issues on the islands that could be exacerbated by any airport expansion strategy. The most obvious is the potential displacement and relocation of the residents of the fishing villages if the government requires them to move. The residents believe they have a right to live there and stated that they would use political representation to fight any forced move without assistance. They believe in peaceful and non-violent solutions to any issue they have (Pereira 2007). They did concede that if the government would provide them enough money or build a new village with utility services, they would relocate. The leaders of the villages referenced a previous move to the current location as an example. The "Voice of America" bought their land south of the city of São Tomé and provided enough money for them to relocate. Due to the previous broken promises by political leaders, the key is for the villagers to see things built before they agree to move. While the uprooting and reestablishing a village would be disruptive and would most likely take them farther from the city center, they acknowledged that they could still fish and maintain their current lifestyle.



PHOTO: JAY A. BIESZKE

**Figure 14: Fishermen of Praia Cruz.** The men repair their fishing nets at the end of the day. Outboard motors are used on many of the larger boats.

Social issues are often associated with economic changes. Even though STP is one of the poorest nations in the world, the majority of its people have adequate food from the island's abundance of fish and produce. As development occurs with an expanded airport and as more people become wealthy in the potential economic sectors of tourism and oil revenues, it is likely that many of the economically disadvantaged people could become increasingly marginalized. The gap between rich and poor may widen causing social strife. Recent labor strikes for improved wages at the airport and bloodless coup of 2003 are evidence that equality is very important for the people of STP. It is evident that any new funds received by the government must be shared with all and be transparent to the citizens.

Another impact to the society is the potential tourism industry. With an increase of tourists, many new services and businesses will be opened and additional revenues received for the country. While tourism is seen as a benefit overall, some of the people of STP have experienced changes that have affected their lifestyle. Instead of fish bought from fisherman on the island, hotels buy from foreign fishing vessels, goods are shipped in to cater to the tourists, service jobs are low-wage, and foreigners may only use the facilities of the resort. Without careful oversight, families that once made a living through subsistence could become dependent on low wage, labor

intensive, service-based jobs. With any change in the tourism market, as seen on the islands of Cape Verde, these families could become poverty stricken or amplify any economic disparities already present. These factors could stimulate the already present informal economy, reducing the recapture of tax revenue by the government, and causing more social issues such as increased crime rates.

The fishing villages' struggle to obtain clean drinking water, reliable energy, and sanitary facilities reflect a common infrastructure problem on the islands and contributes to health risks for the population. A malaria eradication campaign is currently in-place on the islands of STP. While areas are sprayed to kill mosquitoes, they have also been drained. Further improvements in sewage treatment and waste disposal will improve health for citizens and protect the streams and ocean. Throughout the country, some waste is pumped into the streams and ocean, while some is treated through septic systems. The streams are used for washing clothes and bathing and are also used for drinking water. Not only should investment strategies be formed in tourism, but also in health and infrastructure improvements such as sewage treatment, potable water treatment facilities, waste pickup, recycling, landfill facility, and disease eradication.

It is in the best interest of any society to educate its population. Currently, children are only required to attend school through the 4th grade. Subjects taught include science, math, history, environment, and Portuguese (Ferenandes 2007). A few students go on to secondary level and then to college only available at foreign universities. The younger generation recognizes the value of education; they see that those who get a college education will lead the country. Those with college degrees are hired to critical positions of government. When the school children of the village were asked what their ambitions were, many responded they wanted to have professional careers such as nurses, teachers, pilots, etc. Surprisingly, none of the boys



PHOTO: MATTHEW CLAUS

**Figure 15: Laundry at the stream.** Laundry being done along the stream near the town of Neves.

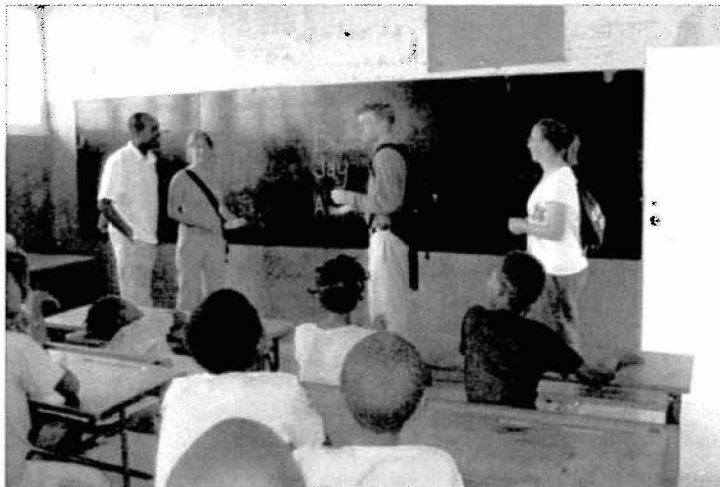


PHOTO: JOEL VANESSEN

**Figure 16: Escola de Francesa,** Visiting with the children after an interview with the school headmaster.

responded fisherman. Therefore, it can be seen that the continuation of education improvement is crucial for this young nation to enable it to build responsible leaders and citizenry for the future.

## ECONOMIC

While the world and news stories report economic potential for STP with oil reserves in the Gulf of Guinea, local citizens views differ dramatically. They hear of the problems with oil in Nigeria and believe that tourism is better suited for the island and is a more reliable source for economic prosperity. The net benefits of tourism revenue include foreign exchange earnings, increased income, employment, and infrastructure improvements. The resources devoted to infrastructure such as power, water, sewage, and roads can support both tourism and local communities. As secondary effects, tourism generates demand in economic sectors of agriculture, manufacturing, and other services (Williams 2002).

STP has one of the richest and most unique natural environments in the world along with a national culture that combines Western Africa and Portuguese in a plantation-based society. The unique native fauna and flora have been isolated from the African continent for millions of years and yet are accessible and preserved to tourists in Obô Park on the island of São Tomé as well as in the pristine areas of Príncipe. In addition, it has wonderful scuba diving and snorkeling spots, game fishing, sailing, surfing, whale and dolphin spotting, hiking, trekking, and bird watching of local and migration species. The rainforest has hidden misty waterfalls and protected sea turtles lay their eggs on the beaches. Winding roads along the coast run past black, white, and brown sandy beaches and coastal blowhole where powerful waves spray upward through black rock outcrops. Tourists can see colonial architectural buildings and roças (plantations) in the countryside. Rusting cannons remain at an old fort housing a museum that reminds tourists of the history of the slave trade on the island. These cultural traditions and natural heritage sites can be utilized to support small eco-tourism resorts.

While all-inclusive resorts are being planned on STP such as the "Blue Lagoon," an attractive alternative is the eco-tourism market that has spread to areas of the world where natural beauty remains. Additional eco-tourism benefits include: new markets for locally produced goods, increase in government revenues through fees and taxes paid by visitors, protection of natural areas, and small job creation like tour guides, museum and visitor center staff, interpreters, park rangers, natural resource monitors, and entertainers that tell the stories of STP.

To encourage tourism, most people agree that the airport should be expanded to create easier access to and from the nation. While a new seaport would support more of an import/export trade economy, an airport would provide access for tourists and deliver goods through the country as a refueling point. With tourist always seeking the newest exotic locations and select wealthy market in West Africa, STP has the potential to service reoccurring clients from West Africa, Europe, South America, and even North America.

While perceived as a guaranteed economic boost for the country, tourism has had historical problems that STP will need to plan to overcome. First, focusing on tourism benefits does not recognize the negative impacts like the drain on local resources and loss of revenues abroad to foreign investment. Second, small and medium sized local businesses can not compete with the large foreign well-financed competitors. Third, tourism ignores the social, gender equity and environmental impacts (Williams 2002). There also may be problems with land grabbing and land



Figure 17: Taxi cab armada in the city of São Tomé.

PHOTO: ANGELA STENSON

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speculation. To establish tourist attractions, privatization of government land and land speculation creates greater inequality in access to common property resources and raises the price of existing real estate. In the worst case, tourism may be associated with large-scale displacement of entire groups of people. All of these have the impact of exacerbating poverty and crime and ultimately destabilizing the society. If not managed well, tourism can have ecological and environmental effects that are often irreversible. Markets that rely heavily on tourism also have problems with sex industry, drugs, gambling, and the spread of diseases like HIV/AIDS.



PHOTO: BRIDGETTE RICHARDSON

**Figure 18: Marlin Beach Resort.** The pool and cabana of the resort.

Even though the expectation of oil revenue was downplayed, the citizens of STP acknowledge that revenues of oil most likely will not improve the general lives of citizens. The existing corruption in the government with “kickbacks” and the large contracts that hide money are some examples (Coelho 2007). Regional events surrounding the oil-wealth of other nations have increased the skeptical views of STP citizens of the true value of oil and its potential for positive effects. The addition of more people working on oil rigs, managing the production, and building a refinery were all seen as unlikely due to two already established refining ports and support infrastructure along the continent of Africa. The team was unable to obtain any plans for any further revenue from drill rights. While West Africa has given poor examples of oil usage revenue, an excellent example of using oil revenue to build a future economy is Dubai. In Dubai, oil funds that are running out are being used to create a tourist playground for the world’s wealthy (Hvidt 2007).

Trade is not expected to become a major source of revenue for STP, because they import a great deal of products already and have few profitable exports. Whether or not that imbalance is a function of an inefficient seaport and infrequent cargo flights or because of the lacking agricultural production, resource extraction, or manufacturing remains to be seen. Agricultural producers and fishermen explained that the lack of a market for their products keeps profit low. Due to mass production, foreign fishermen supply the island and parts of Europe at a lower price than local fishermen do.

An economic development area worth considering is entrepreneurship training. With a limited middle class, there is room for training in management skills and resource maximization. There is a saying on the island that people cut down banana trees to get the bananas because they are so plentiful; they consider it a ‘weed’ (Carvalho 2007). The island is abundant with resources, yet the population is uneducated on how to utilize these to their highest potential. Therefore, training and education can help increase profit and value of local staples.



PHOTO: JOEL VANESSEN

**Figure 19: Lighters used to transport goods** (from ship to shore at the port of São Tomé). The shallow water of the coastline near the city of São Tomé prevents deep-draft vessels from being able to load/unload pier-side.



## POLITICAL

Compared to other Western African countries that gained independence, the islands of STP can be considered very safe and peaceful. The bloodless coup of 2003 demonstrates that STP has remained relatively nonviolent. Part of this can be attributed to their cultural heritage, indebtedness, and the political climate, but this climate is changing. With new money coming in, more corruption is following politicians and decision leaders. For such a small country, new sport utility vehicles driven by politicians and government employees are easily seen by citizens of STP. More and more high-ranking personnel have bodyguards and carry guns. Citizens noted that money from foreign aid, foreign investors, and oil rights should be more transparent in what it is being used for (Fonseca 2007). When the government receives the large funds, its usage is unclear. A citizen suggested that those funds be received in smaller shares into designated accounts that can be easily tracked and shown to the public. Such areas could be roads, schools, hospitals, utility infrastructure, etc. "Skimming off the top" could be minimized and the public could receive more benefit.

Similar to other democratic countries in the world, their system has political pitfalls. Promises are made during campaigns only to be broken by the newly elected officials. Many people do not have faith in their government's ability to follow through. As one interviewee mentioned, "If candidates speak the truth or tell people to work, they do not win" (Reis 2007). Once in office, the leaders are concerned with their image so what is said is guarded to only close friends that they can trust. Currently, there are multiple political parties and in the last election, two of these parties united to beat out the incumbent party. Past adversaries often create obstacles to derail projects to make someone look bad. Citizens feel that if the government does not do what the people want them to do they will vote them out of office. Although this is a foundational principle of democracy, it could undermine the government's ability to accomplish its goals and promises due to fear of election day reprisals.

To exacerbate the difficulties of the political system, nearly all of the political appointees have been replaced following each election as the new regime staffs positions with supporters and party members. Given the nature of this aspect of their political system, it can be difficult for government projects and plans to come to fruition if they are expected to take more than three years. As a citizen recommended, civil employment reform based on civil service would increase accountability to any political party, make more efficient plans, and attend to the needs better.

In addition, the political system is not running smoothly due to unclear roles and responsibilities among decision leaders. This was first highlighted in the coup d'état of 2003 where one of the concerns of rebels was the selection of key personnel that were not qualified and did not know their roles and responsibilities (Pereira 2007). The team also found this to be true while visiting the island and the team identified several different players planning for the airport campus. These overlapping plans cost time and money that STP can not afford.

In a global context, STP is not only a convenient place for travel but is also valuable for its political history and strategic military location. It has maintained good relations with other lusophone nations like Brazil

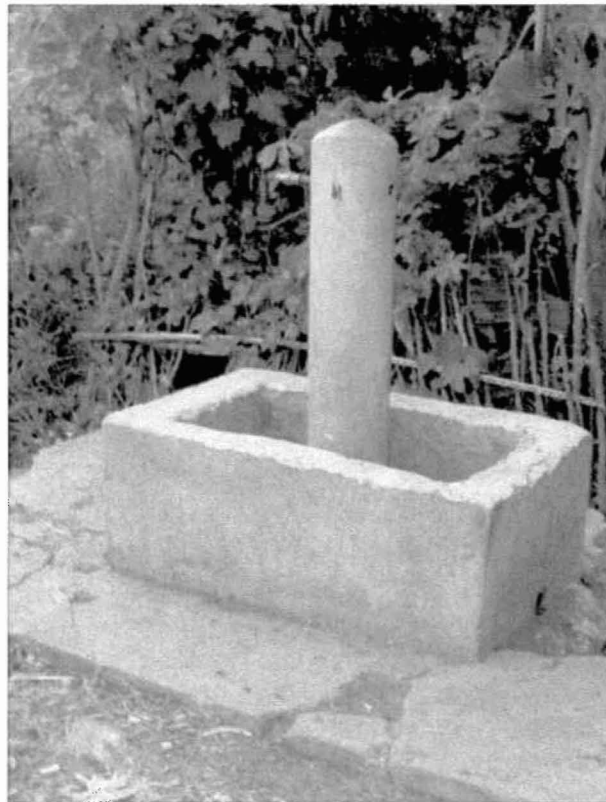


PHOTO: JAY A. BIESZKE

**Figure 20: Dry well located in a village without a potable water source.** Locals were unable to explain why it would not work, but said political promises have been broken several times.

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and Portugal; former socialist states like Cuba, Russia, and China; and West African neighbors like Angola and Nigeria. In addition, it is geographically near oil reserves that world powers are all interested in. Being separated from the continent as an island, the possibility of a foreign military base could dramatically affect the small nation's economy and political relations.

## ENVIRONMENTAL

While existing sectoral environment acts dating from colonial times still remain and with the political turnover of personnel continuing, there remains a lack of national legislative policy geared explicitly towards land management for tourism and environmental protection. Sector controls could be developed into a national institution within the government that coordinates activities within the entire country. Fortunately, environmental problems in STP are not yet severe or widespread. The laws that have been established have restricted exporting timber from rain forests, have protected turtles, and have fined people for making charcoal from trees. But future development could bring increases to poor water quality, forest degradation, species loss, widespread malaria, erosion on steep slopes caused by vegetable growing, fisheries loss, improper handling of toxic and hazardous substances, and coastal erosion due to sand extraction. The future looks bright provided that the government participates in international environmental seminars/discussions and develops its environmental protection legislation.

Closely related to environmental stewardship, there remains no designated zoning areas for future development on the island. Developments are only reviewed as to whether the project is on government land or not. If the project is on government land, it is signed to a fifteen (15) year lease (Menezes 2007). If it is private property, any kind of development is allowed.

A common theme observed from people interviewed is the goal of maximizing the value of their immense variety of natural resources and natural beauty without reducing that net value through over-extraction or unchecked development. Many voiced interest in developing eco-tourism in STP in order to offer low-impact and sustainable tourism for a market typically composed of people willing to pay extra for an ecologically sensitive vacation. In addition, some wanted to maintain Príncipe's natural state due to its immense beauty and untouched resources as compared to the island of São Tomé (Lombá 2007, Lima and Conceição 2007).

With future development, STP will have to make various trade-offs that will be necessary if they are to expand and strengthen their economy. The potential benefits and synergies created by pursuing those goals will also be evaluated based a national environmental policy. One example is that by extending the airport runway to the west, they will meet international standards and eliminate malaria breeding grounds for mosquitoes. But they will also be draining important wetlands, changing drainage patterns, improving the health of its citizens, and making it more attractive for tourist to travel to the island.



PHOTO. JAY A. BIESZKE

Figure 21: São Tomé Countryside. Along the road at the southeast side of the island of São Tomé.

## V. SCENARIOS

### INTRODUCTION

The following four scenarios are conceptualized futures for São Tomé and Príncipe (STP). The scenarios in this report are structured around the concepts of critical unknowns and driving forces. As the team unfolded the scale and complex layers of STP, it was evident that several scenarios beyond the four presented in this report can be determined if other critical uncertainties are selected.

The team's status as *outsiders* and the subjectivity inherent in the process makes it essential to continuously engage the STP stakeholders in order for the conversation to evolve in a dynamic world. The following selected scenarios are provided as a starting point for establishing effective discussion.

The uncertainty of what might happen in the next ten to twenty years led the team to develop four scenarios that were selected based on driving forces and critical uncertainties of national economic development and airport development. The team took care to ensure that the report was able to illustrate the range of possible physical futures specifically to generate a discussion regarding the relationship of the airport and the adjacent fishing villages.

The four scenarios are intended to guide dialogue among decision makers regarding future airport development policies by discussing possible futures. Each scenario emphasizes a different possible outcome based on which factor is most influential. The team determined that four fundamental development strategies were likely: confidence in tourism, integration of Príncipe into the development paradigm, a feeling of security in the status quo, or aspiration for a diversified economy. Scenario 1: Betting on Tourism includes two subscenarios which assume steady growth in the tourism economy. Scenario 1a: Airport Megalith suggests what might happen if tourism grows rapidly around the current STP terminal. Scenario 1b: A Tale of Two Islands shifts focus of airport and tourism development from the current airport to the island of Príncipe in order to consider what would happen if airport and tourism development occurred elsewhere. Scenario 2: Levé, Levé discusses possible opportunities and limitations resulting from a slow growth policy approach to development. Scenario 3: A New Twist explores possibilities of other emerging development options such as entrepreneurial ventures that could change the economic landscape.

For national economic development:

1. *Tourism*: Represented in Scenario 1a and 1b, tourism is the economic boost for the islands in the form of employment and wealth. Relaxed regulations that attract developers and tourists from Europe, Africa, and South America create this tourism economy.
2. *Status Quo*: Represented in Scenario 2, the current economic structure remains in place that encourages slow and controlled growth that preserves cultural heritage and national ecology. Eco-tourism and little dependence on foreign investment and influence create this economy.
3. *Diversification*: Represented in Scenario 3, diversification of the economy into fields of education, bio-research, alternative energy research, tourism, and financial results in improving the economy. It is achieved through maximizing its location and its natural resources to attract the various fields.

For the airport development:

1. *Rapid/extensive expansion*: Represented in Scenario 1a, the airport grows as a result of tourism demand. The airport quickly claims ownership of the land surrounding the airport, the villages are relocated, and airport uses the land for airport/government uses.
2. *Moderate/extensive expansion*: Represented in Scenario 3, the airport grows as a result of demand from new economic sectors. As part of a coordinated plan for the island, the airport claims ownership of land to south and west of the airport, encourages relocation of villages through 3rd party sales, and uses the land for airport uses.

3. *Relocation*: Represented in Scenario 1b, the airport remains the same size with minor improvements. The airport claims ownership of land to the west for potential growth, the villages are allowed to remain, and a larger airport is made in a new location.
4. *No expansion*: Represented in Scenario 2, the airport remains the same size with minor improvements. The airport's current boundaries remain, the villages are allowed to remain, and land rights remain disputed.

For the fishing village:

1. *Relocation/displacement*: Represented in Scenario 1a, the airport/government clearly holds the land rights. This allows for the efficient relocation of the villages to make way for the needs of the airport.
2. *Investment relocation*: Represented in Scenario 3, the airport/government holds the land rights and the villagers hold squatter rights. In negotiations, villagers are encouraged to leave through sales to private investors that would benefit from being close to the airport. In good faith to villagers and to encourage long-term investors, the government provides utility improvements that can be used by investors once the villagers relocate.
3. *Ignored (no new utilities provided)*: Represented in Scenario 2, the land rights are disputed and the lack of a decision results in little change.
4. *Given legitimacy in its current location (utilities would be provided)*: Represented in Scenario 1b, the conflict between the airport and villages is removed and it is politically acceptable to fully recognize the villages and provide them with infrastructure improvements.

**Table 1. Summary of Scenario Conditions:**

	Economic Development	Airport Development	Fishing Villages
<b>1a. Betting on Tourism: Airport Megalith</b>	<i>Tourism</i> is aggressively pursued to promote employment and wealth. Relaxed regulations attract developers and tourists to create this tourism economy.	<i>Rapid/extensive expansion</i> : the airport grows as a result of tourism demand; quickly claiming ownership of the land, villages are relocated.	<i>Relocation/displacement</i> : the airport/government clearly holds the land rights; allowing for efficient relocation of the villages to make way for the airport.
<b>1b. Betting on Tourism: A Tale of Two Islands</b>	<i>Tourism</i> is aggressively pursued to promote employment and wealth. Relaxed regulations attract developers and tourists to create this tourism economy.	<i>Relocation</i> : a larger airport is created in a new location while the airport (on Sao Tome) remains the current size. The villages are allowed to remain.	<i>Given legitimacy in its current location</i> : it is politically acceptable to fully recognize the villages and provide them with infrastructure improvements.
<b>2. Levé, Levé</b>	<i>Status Quo</i> : current structures remains resulting in slow and controlled growth that preserve culture and national ecology.	<i>No expansion</i> : the airport's current boundaries remain, the villages are allowed to remain, and land rights remain disputed.	<i>Ignored (no new utilities provided)</i> : the land rights are disputed and the lack of a decision results in little change.
<b>3. A New Twist</b>	<i>Diversification</i> : economy is expanded to include education, bio-research, alternative energy research, finance.	<i>Moderate/extensive expansion</i> : the airport claims ownership of land to south and west of the airport, encourages relocation of villages through 3rd party sales.	<i>Investment relocation</i> : the government holds the land rights. Villagers are encouraged to leave through sales to private investors.



Looking at the full range of these physical relationships along with the driving forces within the scenarios can help with evaluating the outcomes and asking the basic questions: Is this a desirable future? Should we prevent this future from becoming reality? How can we make the future of São Tomé better? Is this an equitable solution?

The team has attempted to create scenarios that are “reasonably plausible, but structurally different.” Interdependence of the airport and the country as a whole was used as a starting point for discussion whereby the small scale of STP makes planning for an airport impossible without considering the impacts on the country as a whole. This led to a process of looking at outward and inward effects simultaneously. While the team acknowledges that some may not be accepted based on different views, they were envisioned to stimulate discussion about the future among stakeholders.

Each scenario includes a narrative section illustrating what life in STP might be like for one individual citizen. Land-use maps and forces on the airport campus are also provided in order to help in visioning possible futures. Each scenario discusses economic, social, environmental, and political impacts and provides emerging or disappearing futures. Lastly, there is a conclusion and recommendations for the stakeholders.

The discussion of each scenario is constructed using the following components:

*Scenario Description:* Introduces the scenario and explains how it is structurally unique.

*Driving Forces:* Describes the significant events, policies, and social pressures that cause change to occur.

*Narrative:* A fictional story bringing to life what everyday life might be like within each scenario.

*Effects and Implications:* Outlines and discusses different aspects of the economic, social, environment, and political outcomes of each scenario.

*Effects on the Airport Campus:* Describes the impact of the driving forces on developments at the airport.

*Disappearing and Emerging Futures:* Discusses how each scenario limits certain options and creates other opportunities in STP.

*Conclusion:* Includes thoughts about the consequences of each scenario and recommendations for future policies for the airport campus and STP.

## SCENARIO 1: BETTING ON TOURISM

This scenario captures what the Master's project team observed as the general perception and expectation of many people in São Tomé: "development of extensive tourism amenities will be a good thing for the country and is the best way to proceed." The initial scenario uses this idea of encouraging tourism industry growth on the island of São Tomé to justify a significant expansion of the existing airport facilities. This conventional thought pattern is along the lines of the development paradigms currently and frequently discussed as a possibility. A second and less conventional scenario features tourism development focused on the island of Príncipe. The team found that this scenario has some unique implications that should be discussed because they completely change the airport requirement on São Tomé as well as altering environmental outcomes across the nation.

It is common for small island states to view the tourism sector as the key to their success because they lack many other opportunities (Commission on Sustainable Development 1996, Ford 2003). With the exception of the local village fishermen, the belief of "tourism is the way" was clearly observed in interviews. The United Nations, Small Island Developing States program documented tourism as the successful primary economic base for the islands of Antigua and Barbuda, Aruba, Barbados, Saint Lucia, the Bahamas, Saint Kitts and Nevis, and Seychelles (Commission on Sustainable Development 1996). If carefully planned, tourism has the potential to accelerate the growth of national incomes, provide gainful employment, and government tax revenues.

Both development patterns under Scenario 1 were developed to further the discussion of rapid and relatively unbridled growth. This is a very realistic approach to development that gives-in to the pressure of tourism at the expense of natural and cultural resources. These scenarios draw on the common belief that tourism should be aggressively pursued. The expectation for the airport is that it needs to quickly expand and improve in order to accommodate the needs of the tourism market.

### DRIVING FORCES (COMMON TO BOTH SCENARIOS 1a AND 1b)

This scenario group quickly and directly answers the call for a larger and better airport. The principles and forces that are common between both of the "Betting on Tourism" scenarios include:

1. *Growth machine.* This hypothesis holds that municipalities are fundamentally "growth machines" that produce wealth through real estate development. For STP this translates to the idea that tourism development will result in national and private wealth.
2. *Growth is good.* This common philosophy focuses on the positive effects of growth with the opinion that any negative effects are outweighed by the positive effects such as wealth.
3. *Build it and they will come.* There is an untapped or under-developed market of opportunity. It is not possible to over-build because the demand significantly exceeds the current supply. A market flood of consumers will occur as soon as the infrastructure is complete to support the amenities. The sooner built, the sooner the country will experience monetary benefits.
4. *Economies of agglomeration.* There is a financial benefit of many businesses locating in close proximity to each other. Thus, attraction of many tourism developments significantly improves the wealth capability of the whole.

The scenario "Betting on Tourism" was subdivided. Each of the resulting scenarios illustrates economic advantages from rapid tourism industry expansion. However, they highlight the need for good planning and regulation in order to prevent the overrun and loss of all natural and cultural resources.

Scenario 1a (Airport Megalith). In the first of the "Betting on Tourism" scenarios the land surrounding the current airport is quickly secured and cleared in support of airport expansion. The entire island of São Tomé

is made available (through pro-growth policy and regulations) for developers while the island of Príncipe is restrictive in order to preserve its natural beauty.

Scenario 1b (A Tale of Two Islands). In the second of these scenarios, the decision is made to put significant restrictions on development on the island of São Tomé in hopes of protecting the larger land area from degradation. A new full-scale international airport on the island of Príncipe is constructed with the vision of turning the small island into a resort.

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## SCENARIO 1A: AIRPORT MEGALITH

This scenario sees the natural beauty, scenic beaches, and budding tourism industry provide the spark to attract significant foreign investment. There are only two politically agreeable objectives: economic growth is good and the airport is a central piece to development. The airport greatly expands to meet international travel demands; and consequently, large-scale all-inclusive resorts develop across the island. Developers make São Tomé into a tourist's island paradise. It becomes the "African Caribbean." Money from foreign investors flows to the island and more citizens of STP are able to enter the cash economy and formal market. However, as the tourism industry takes over, many poor people are further marginalized, the local culture is subjected to change in market demand, and the environment is opened to adverse impacts. The government relocates the villages of Praia Cruz, Praia Gamboa, and Praia Loxinga further north along the coast. This opens a prime location directly adjacent to the airport for industrial development and military facilities.

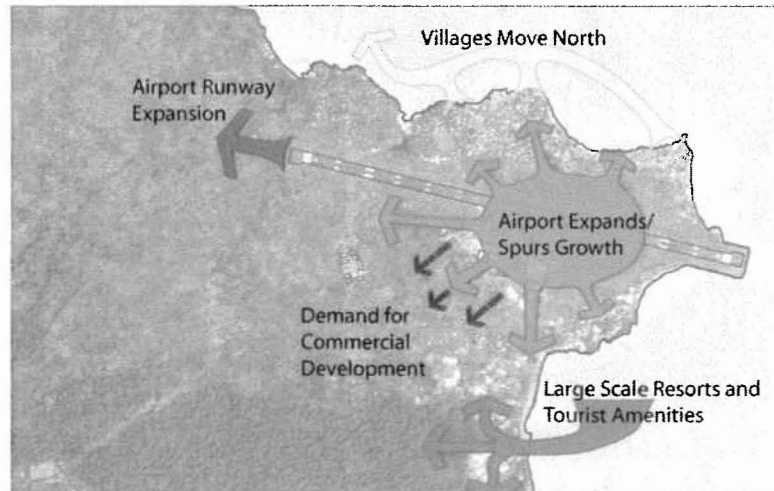
### Narrative:

Oswaldo Cruz can hardly believe how short the flight is from Portugal. He is coming to São Tomé to scout out potential investments. He has heard stories about the growing investment opportunities in São Tomé, but the stories did not sound like what he remembered 15 years ago. Then the airport was much smaller, there were only a handful of small hotels. Now Oswaldo has come to see São Tomé again for himself.

Oswaldo exits the plane at the São Tomé International Airport and is bussed to the terminal. "When did this place get so busy?" he exclaims, after looking up at the arrival/departure board. "It seems like just yesterday that there was only one or two flights a week from Europe, now the flights are much more frequent and from more places." Oswaldo looks around the bustling airport terminal with people talking, picking up their luggage, giving greetings, and having happy reunions. He is glad that the tickets are getting cheaper and travel to São Tomé is getting easier. This is because of the large expansion of the airport including a runway extension, larger terminal, increased security and the addition of local shops and service counters for car rentals, hotel reservations, sightseeing trips and more. Oswaldo swings by the baggage conveyor and picks up his luggage before he arranges for a taxi to take him to his hotel.

Inside the lobby of the hotel, tourists relax waiting for their guide to take them on a sightseeing excursion.

(continued on next page)



SOURCE ORTHOPHOTO, GOOGLE EARTH

Figure 22: Airport Megalith: Pressures and Forces Map

### DRIVING FORCES

1. *Airport takes charge of its destiny.* With increased revenues from fly-over fees, assistance through foreign aid, and the financial support from foreign investors, the airport has the ability to expand and upgrade its facilities, which create an attractive first impression for visitors of São Tomé. Politicians, though slow to implement cohesive development plans, recognize the importance of the airport as the gateway to the nation and to growth. Thus, the airport is funded to construct facilities and allowed to take control of government land, as needed, which includes the displacement of the villages.
2. *No political consensus.* Politicians and leaders agree to nothing besides the idea that growth is good and that the airport needs to expand. The government continues to completely turnover with each newly elected party. Each party may have a vision for the country's development, but is unable to implement a specific plan. This continues the lack of regulation and enforcement on the island.
3. *Money talks.* Foreign investors perceive São Tomé as the future island paradise for West Africa. Large multi-national corporations, foreign entrepreneurs, and wealthy developers are able to gain considerable

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Oswaldo checks into the hotel and makes his way up to his room on the 15th floor. The view from his window is breathtaking. There is a beautiful sandy beach with palm trees and sparkling clean water stretching around the bay by the hotel. He looks up and down the beach; very little is visibly left of the wooden shacks and houses where the hotel is now. Just beyond the resort perimeter fence Oswaldo can see the squalor of primitive shacks and other signs of poverty. Several years ago, an investor bought the land and had plans to develop the area into a resort and hotel. Many São Toméans were against the development because of how the other hotels have been taking up the best land by paying land owners and residents to move elsewhere. People were concerned that they would have a place to live and that the trees, water, plants, and animals would be preserved for later generations. But in the end the hotels were built and now many São Toméans work in the hotels and resorts or supply them with food and services. Oswaldo has heard that it is getting easier to build with the deregulation instituted by the government.

Oswaldo decides that he will go down for lunch and try the local cuisine. On the lunch buffet he is surprised to find a mixture of imported food and food bought and prepared locally. As he sits down to enjoy some lunch Oswaldo marvels at the dramatic changes to the airport and the surrounding campus. He looks out the window at the full parking lot outside and watches as yet another plane lands at the nearby airport. Oswaldo breathes out a sigh, "I guess the tourism business seems to be doing very well in São Tomé after all."

sway over the island's affairs and are able to implement their development projects as they wish. There is a common assumption that the money coming to the resorts will trickle down to the poor.

## EFFECTS AND IMPLICATIONS

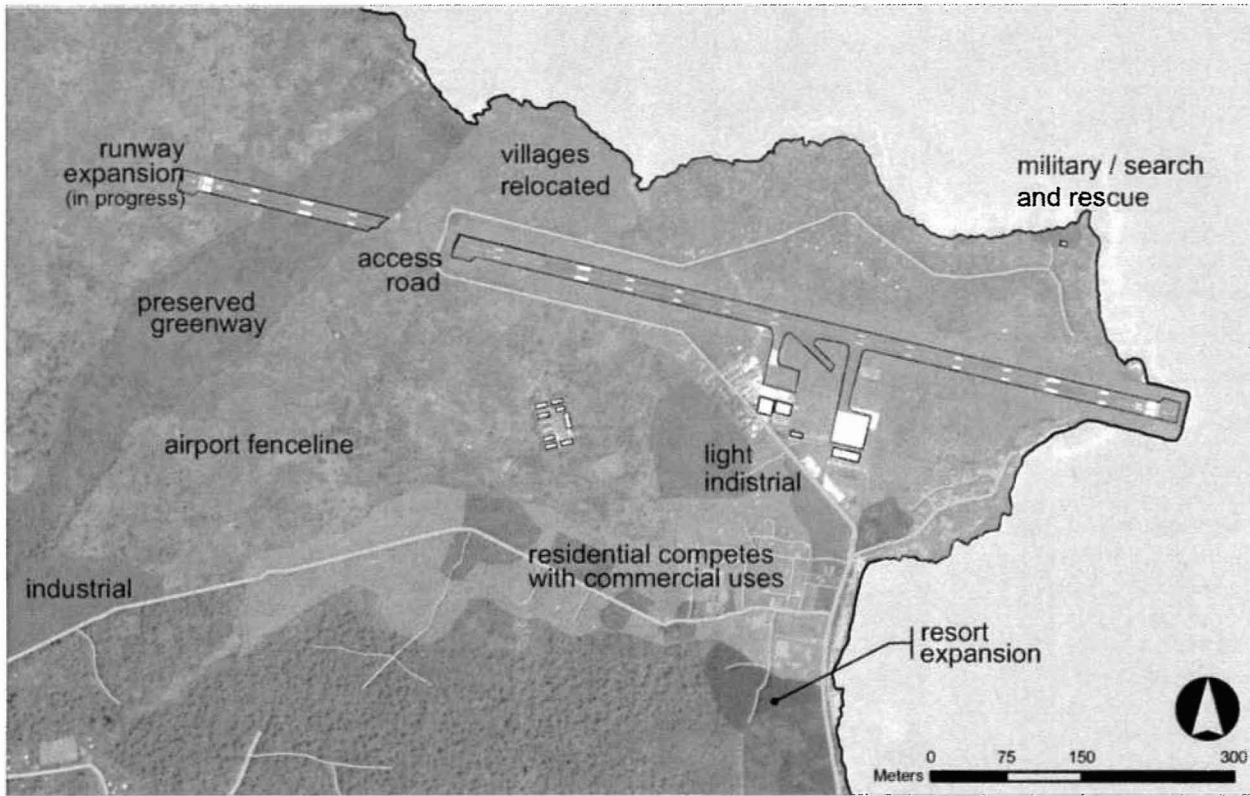
Sweeping changes will occur quickly as these driving forces emerge to shape the future of São Tomé. Locations that will develop in the short-term include areas with access to the airport, pristine beaches, and beautiful views. Business opportunities will be abundant and employment will be available. However, this scenario has the possibility of changing the island in many ways. While wealth, employment, and tax revenues will increase, there is an increased possibility of providing primarily low wage / low skill jobs, affecting the natural environment, and changing the culture.

### Economic

Disregarding conventional advice to diversify, São Tomé will pursue the "silver bullet" of tourism to foster economic development. Overall, more employment will be available on São Tomé and more people will be able to participate in the cash economy and formal market. However, many of these jobs will likely be low wage / low skill service jobs. The nation will see quick rises in Gross Domestic Product and personal income. The expenditures by foreign tourists represent a transfer of currency into the nation's economy (Pigozzi 2005). As a benefit, the government will have an increase in revenues through property and sales taxes. As developers construct hotels and other tourist facilities near the airport, some displaced villagers will work low skill level service jobs. Though most new jobs associated with the resorts will be lower level service jobs, there will be demand for managers and supervisors. Some of these tourism-oriented jobs will require business training. As foreign tourists need services, there will be a need for people who speak foreign languages, such as French, English, and other languages of the tourists. Citizens of STP that have these skills will have the greatest opportunities for economic advancement. It will be difficult for STP's citizens to acquire these skills, as advanced education opportunities are only available in other countries.

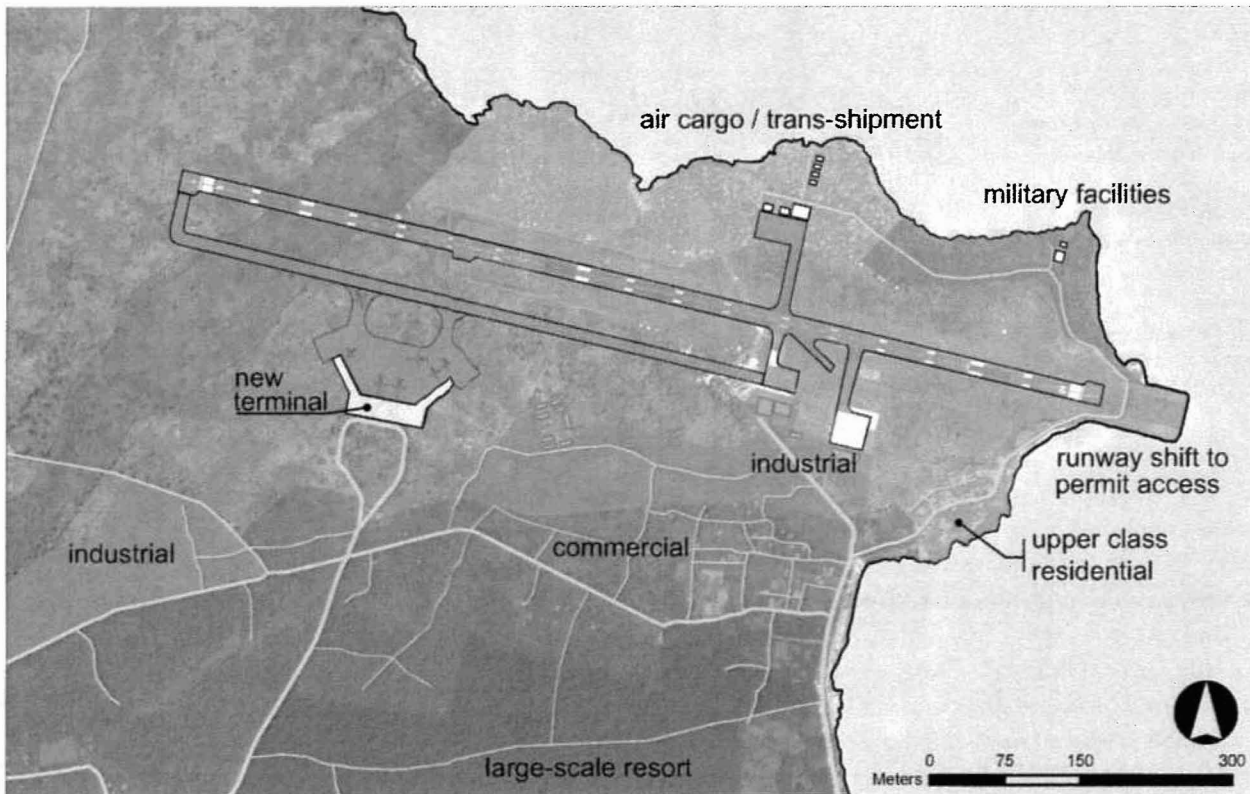
Citizens of STP will have an opportunity to make money through small business and entering into the cash economy. Tourists will bring money and market demand for a variety of goods and services. Sectors with linkages to tourism such as guided tour companies, restaurants, bars, and souvenir shops may be examples of the business opportunities for Citizens of STP. If the money in the country is made available as investment capital for the local entrepreneurs, the country can expect to see widespread positive affects from the tourism industry. Many small island nations have had growth in other sectors in their economies, when adequately linked to the tourism industry (Commission on Sustainable Development 1996). However, as many Caribbean nations have discovered, tourism development frequently has significant economic leakage (Pigozzi 2005). Leakage is when revenue gained from an economic activity, such as tourism, is spent outside the local economy, rather than being re-circulated. In 1992, Jamaica lost an estimated 40 percent of its foreign exchange earnings from tourism to leakage, while the East African island nation of Seychelles





SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 23: Airport Megalith: Short-term Change.** That land occupied by the three fishing villages north of the airport have been claimed by the government and the residents displaced. This land has been made available for other government uses that are compatible with the airport. Airport begins to expand the runway.



SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 24: Airport Megalith: Long-term Change.** Runway expansion is complete along with a new passenger terminal. Compatible, industrial uses expand north of the airport and claim old facilities to the south. Commercial and resort development agglomerate around new roads leading to the airport.

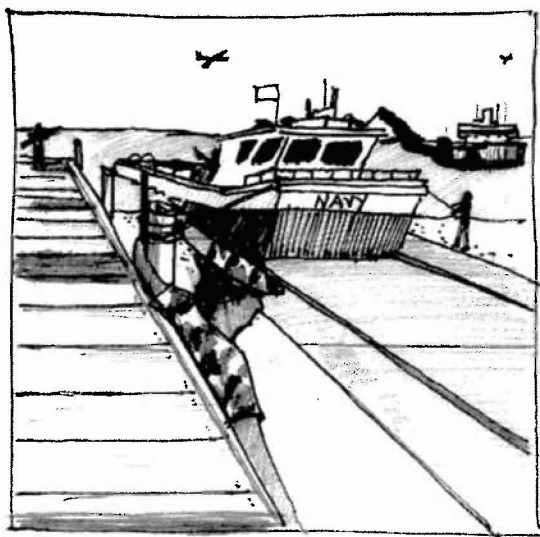
had leakage of 30 percent (Commission on Sustainable Development 1996). Tourism development in small developing nations, such as STP, often requires materials and expertise from foreign countries. This requires the tourism revenue to be used outside of STP, rather than being used to support the local economy. Profits from the developments will usually go to foreign investors, rather than to locals. Additionally, the foreign tourists require imported goods and services (Pigozzi 2005).

As the government is primarily interested in attracting foreign investment, most infrastructure expenditures will be in direct support of the tourism industry. The main physical infrastructure investments for the tourism industry are: transportation, communication, water supply, and energy (Commission on Sustainable Development 1996). Roads, water, and sanitation projects first will serve the moneymaking resorts, and only as a secondary effect will the infrastructure conditions improve the standard of living for ordinary people. Despite being secondary, the improved infrastructure will lower the costs of doing business for all members in society. The government will improve the road between the city and the airport with lights, signage, and a posted speed limit to accommodate higher traffic counts and foreign tourists. Some developers will be willing to front the costs of infrastructure investments that benefit their businesses. The beaches for tourists will be cleaned up, but trash collection for the population may see only a marginal improvement.



BRIDGETTE RICHARDSON

Figure 25: Sketch: Current conditions - fishing from the village.



BRIDGETTE RICHARDSON

Figure 26: Sketch: Future - military facilities replace the villages. Small patrol boats operate from the docks of newly constructed port facilities.

Since the government focuses on attracting foreign investment, large investments or improvements will not go to rural infrastructure or agriculture production. Once the demand for foreign goods from the tourism industry reaches a certain point, the government will need to improve the port facilities to provide for a cheaper and easier shipment of goods. Export production and economic diversity will likely lag due to a lack in rural infrastructure and institutions; however, improved port facilities may provide cheaper access to foreign markets thereby increasing the likelihood of some export production. Many island nations have had declines in fishing and agricultural production as the expertise and labor required for agriculture production shifts to other industries, such as tourism (Commission on Sustainable Development 1996).

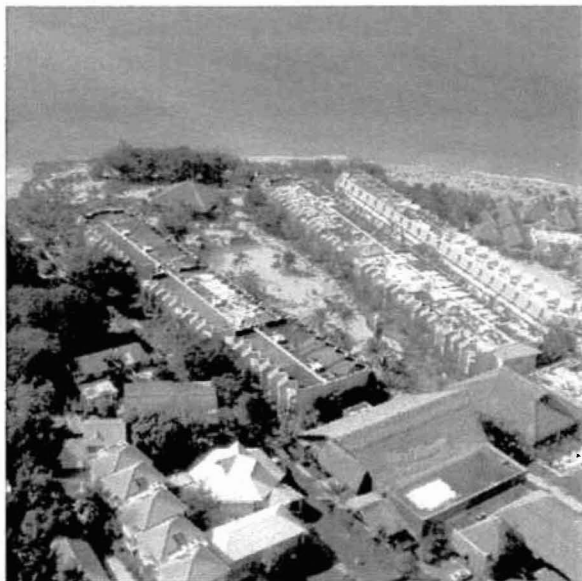
This scenario is not dependant upon government revenues from possible oil production. Any oil revenue in this scenario would likely go to funding the construction of tourism related infrastructure. The airport will not be able to finance the full expansion of the runway and new facilities with fly over fees, but oil revenue or foreign aid would likely make these expansions possible.

### Social

The rise in tax revenue will allow the government to provide more resources for education and health care. The government will take the necessary steps to eradicate or greatly reduce malaria and cholera. As necessities to eliminate these diseases, general sanitary conditions around the island improve. As the population's income rises, households will be able to afford educating their

children longer, and the government will build new schools. However, this will not occur rapidly and the positive benefits will not be immediately apparent. In the long term, these social improvements will greatly add the citizens' quality of life. Many small island countries have seen increases in literacy, life expectancy, and income along with decreases in infant mortality, unemployment, and fertility rates (McElroy 2006).

At first, the local culture will be a valuable commodity. Tourists will pay for the experiences and goods produced by the culture. However, over time, the market demands could fundamentally change the culture and people's lives as they compete for the tourists' money. The increase of foreign influence and the commercialization of culture will likely threaten to erode the STP's local culture (Commission on Sustainable Development 1996). The culture of the island will shift from that of its historic past to that of a resort island paradise where everything is about getting money from tourists.



SOURCE: [HTTP://IMG142.IMAGESHACK.US/IMG142466PUNTACANA3PF3.PNG](http://img142.imageshack.us/img142466/PUNTACANA3PF3.PNG)



SOURCE: [HTTP://WWW.POI-PU-KAPILI.COM/BIG\\_EXTERIOR2.HTM](http://www.poi-pu-kapili.com/big_exterior2.htm)

**Figure 28:** All-inclusive resorts are constructed across the island; drawing tourists from Africa and Europe.

If the airport can build and expand as it chooses, the villages near the airport hold little political influence. Since they are in the way of expansion, few will see the villages as important. The government will see the concerns of the poor in these specific villages and the rural poor around the island as secondary to development. The villages separated from the developed areas will initially receive few improvements from the new developments and the profits on the island. The probable effects will be an increased sense of alienation as they see development and improvements but personally receive few. In other countries where rapid tourism development has taken place, there has often been an effect of isolating the already marginalized (Mycoo 2006).

Even if the government compensates the villagers for their land, there will be large disruptions of social life. Their ability to sell their fish at markets in the city will be limited. Only if the government provides public transportation with the relocation will the villagers retain access to the city. The disruption in social networks will change the informal exchange of excess fish currently seen between the villages. If environmental degradation affects marine life as in the Seychelles islands, the villages' source of income and the way of life of fishing will be eroded (Hutchings 1996).

The change from a subsistence life to service employment will likely cause many sweeping social changes. The service jobs provided by the tourism industry are subject to the fluctuations with the tourism seasons and trends. This causes household incomes to rise and fall through the year. Additionally, the tourism seasons affect the prices of goods throughout the year, as vendors are able to charge more when tourists are present. In other small tourism economies, a high proportion of these service jobs tend to go to female workers (Pigozzi 2005). This can cause many changes for the households.



Other social affects also follow an increase in mass tourism. Many Caribbean nations have seen rises in prostitution and drug use during the tourism seasons (Mycoo 2006, Pigozzi 2005). Additionally, with increased connections to Sub-Saharan Africa, there is the threat that HIV/AIDS could become a problem for São Tomé. Migration to the island increases as mass tourism grows, and the natural population growth rate usually slows (McElroy 2006). São Tomé will expect to see many similar social changes.

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## Environmental

As foreign investment becomes the priority, environmental protection will not be a primary concern of the government. However, since the beautiful natural environment is a major attraction for foreign tourists, it will be important that massive degradation does not occur. Either the tourism industry will internalize environmental externalities, or the industry will pressure the government to provide minimum regulations to protect their investments. The island nation of Barbados has seen the voluntary compliance of the tourism industry with green certification (Mycoo 2006). Many developing countries have relied upon natural resource extraction to fund their development; however, small island nations have an opportunity to develop in a sustainable way due to the importance of the natural scenery (Hutchings 1996).

With the relaxing of regulations and increase in foreigners, the threat of adverse environmental impacts will increase. Barbados saw significant environmental destruction when the tourism industry first began to take off and the government generally stayed out of regulation (Mycoo 2006). The government will not necessarily reduce regulations from what they are currently, rather there will be no attention given by government officials to the restraint of developers. Another case study that provides insight to the environmental damage that a runaway tourism industry can produce is the island nation of Seychelles. The development of hotels, resorts, and other attractions has led to coastal erosion, agricultural land destruction, water consumption conflicts, and large increases in waste from tourists (Hutchings 1996).

The government will likely think only about tourism and increasing revenue. The villagers (the poor people) will most strongly feel the impacts of environmental degradation. The poor are most often those reliant upon agriculture and fishing for their livelihoods. As is the case on the northeast coast of Puerto Rico, the pollution from resort sewage, construction waste, visiting yachts, and erosion greatly affect the already marginal lands, which the poor most often occupy (Earth Island Journal 1998). Additionally, land price increases through development pressures often push local residents out of their traditional locations (Pigozzi 2005). The tourists attracted to the island will also have an impact on the National Parks. The park will change in character because of the pressure of the additional number of visitors.

Essentially, the government, as in its current limited capacity, will not have the resources to respond to the increasing pressures on the environment. The primary concern for investment opens the way for relaxed regulations. This will allow foreign capital to initially flow easily to the island. Over time, though, investors in tourism may be reluctant to invest in STP, as the country's tourism industry will eventually reach stagnation. It will be important that the government pursue a diversification not only in the national economy, but also in the tourism economy itself.



BRIDGETTE RICHARDSON

**Figure 29: Land-use Section - Airport Megalith long-term changes** - Residential uses adjacent to the international airport replaced by commercial, industrial, and government uses. Land is definitively controlled by the needs of commerce and economic development.

## Political

Two of this scenario's driving forces are large pressures for resort development, and little political unity to regulate directly the development process. The political process will continue in a similar way, as it does today; there will not be the political will to fully implement and enforce regulatory laws. The trend of a large turnover of the civil service at each election cycle will continue. With this turnover, there is little chance the country will achieve effective enforcement in time to mitigate the impacts of foreign investor's resort developments. As the people of STP see the degradation of their environment and the elite become richer, the citizens will become unhappy and elect new political leaders. Without equitable economic development, the political cycle of change will continue due to the dissatisfaction of the citizens. New parties and politicians will continue to be elected who in turn appoint a vast number of party members and loyal friends throughout the government.

However, in order to attract large amounts of foreign investment, the government will need to reinforce certain key institutions such as property rights, planning, civil society, and public works. These institutions provide assurances to investors that they will likely receive adequate returns for their investments. Though Barbados initially had significant environmental damage, this country has seen a well developed tourism industry respond to the government work on these necessary institutions (Mycoo 2006).

## EFFECTS ON THE AIRPORT CAMPUS

The airport expansion is a key component of this scenario. The government will see the airport as a gateway to this foreign investment, and thus the airport must expand. Other developing island nations have shown the necessity of efficient air travel to tourism development (Commission on Sustainable Development 1996). The airport will build a new terminal in this scenario. This will be necessary as air travel demand increases. All necessities of a modern international airport are included in this new terminal. Security upgrades are made. Adequate space will be provided.

Additionally, the runway expands and the structure of the runway gains improvements. The runway will extend to nearly twice its length. The airport will reconstruct the current runway after the full extension of the runway is complete. These upgrades allow for any type of international airplane and carrier to land on São Tomé. This allows for increased access to not only all African, but also European and North American tourism markets.

The airport will complete the security fence surrounding the airport with no access across the runway permitted. Along with this, the airport displaces the villages to the north. The villagers are phased out quickly. New military/coast guard installation and industrial facilities replace the village. This will be necessary for several reasons. As pressures grow for land development, the current military facilities to the south of the airport will be a highly desirable place for development. As foreign tourists increase in numbers, investment increases on the island, and with the possibility of oil in São Tomé waters, there will be an increased demand for security surrounding the island. Additionally, as the air traffic increases, the tourism industry demands more goods, and the duty free area requires high value foreign merchandise, there is a greater need for warehousing and transshipment facilities near the airport. Near the military facilities and on the former site of Praia Cruz could be a logical place to locate such facilities.

The demand for services and goods will increase with the rising tourism economy; a demand for small industry will also grow. Since there will be little government or private initiative to make São Tomé a manufacturing exporter, the industry will orient entirely toward the tourism industry. The types of industry that will locate around the airport include food processing, souvenir manufacturing, warehousing, shipping, laundry, and delivery services.

Included in the new terminal will be a substantial area for duty free shopping area. These shops will sell luxury items as are typically found in duty free shopping areas as well as São Tomé souvenirs and keepsakes. In addition to duty free within the airport, a commercial shopping area will develop directly adjacent to the airport. This area will allow tourists to fulfill their shopping desires without traveling into the city. This will spur interest for other commercial investment around the airport. Restaurants, car rentals, retail clothing, etc. will all locate around the airport.

## DISAPPEARING & EMERGING FUTURES

As this scenario unfolds, several futures become unlikely while others become more possible. This scenario greatly limits the ability to build large-scale resorts on Príncipe. All resources and investments are concentrated on São Tomé, which makes Príncipe's development less likely. With massive investments in infrastructure and airport improvements, there would be a political hesitancy to divert investment away from where the government has already spent money. Once the government has committed to massive expenditures on the island of São Tomé, there will not be the political will to invest on Príncipe. There will likely be fears that investments on the other island will either divert the tourism market from the island of São Tomé, or that the investments on Príncipe will fail.

This scenario also limits to possibility of preserving São Tomé as a purely cultural and eco-tourist destination. These types of tourism may persist on the island, but will become secondary to the large-scale all-inclusive resorts. Most of São Tomé could be attractive to the smaller-scale cultural and eco-tourism, but as large-scale development spreads, fewer places will have the appeal to the eco-tourist. As a demand for more roads and more buildings develops, the ability of the government reduces its ability to preserve the natural environment.

The diversification and expansion of agricultural production is probably limited in this scenario. Countries that have diverted attention and investment away from agricultural development have not had the possibility to regain agricultural production. Once the tourism industry converts agriculture land into another use, it will be highly unlikely that the land will be farmed again. Additionally as farmers join the service industry, their knowledge of local crop production is lost.

However, another future that still could be possible is diversifying the economy in other sectors. Several predominately tourism dependant countries, particularly in the Caribbean, have been able to use tourism tax revenue to enable small exporting industries.

A future that is preserved through this scenario is that the island of Príncipe can be preserved as a cultural and environmental asset to the nation. Many people today see Príncipe as a pristine and beautiful place. By encouraging development only on São Tomé, the pressures to build on Príncipe will likely remain limited.

This scenario assumes that all investment is oriented toward one industry. Another future that is a distinct possibility with this scenario, though undesirable, is that the tourism market could leave São Tomé. If fewer tourists seek São Tomé as a destination in favor of another location, the infrastructure and resorts built to accommodate these will be of little value. Consequently, the nation's economy is vulnerable to fluctuations in the tourism market.

## AIRPORT MEGALITH CONCLUSION

"Airport Megalith" provides the airport and country with many opportunities and challenges. The abundance of wealth provided through the growth of tourism will supply jobs and businesses opportunities for the São Tomé residents. Through the increase in tax revenue, the government will be able to provide education and healthcare.

However, the residents may be limited in their ability to profit from the wealth due to the dominance of low wage and low skill jobs. These changes to the island will create many challenges for the airport as it continues to grow.

## Recommendations

1. The airport needs to negotiate the terms of airport expansion and village displacement with the village stakeholders. This may be difficult, but there are many sources of guidance for this negotiation process in order that the terms will be agreeable to all sides. First, the airport should consider the guidelines established in the Government of São Tomé's *Resettlement Policy Framework* established through the World Bank's Social Sector Support Project. Second, the airport should consider several cases where government entities have successfully and equitable displaced local residents. One example is in Lima, Peru and the use of a non-governmental organization in the resettlement process (Field 2005).
2. Land rights for the airport campus area should be clearly defined. This will allow for the airport the more easily implement its expansion plans. Additionally, this will assist the local residents in negotiating with developers. If the airport becomes a central hub of activity for the island, there is a likelihood that the residents currently living near the airport will have conflicts with and pressures from businesses looking to move into the area.
3. Though most politicians and investors may be pursuing rapid growth, it will be important for the airport to make careful decisions so as not to become overextended. In addition, the airport should work with area residents and other governmental agencies to develop a comprehensive land-use plan. This will help facilitate a more orderly growth around the airport.
4. If large amounts of revenue become available, given the current political situation, it will be likely that the money will be spent quickly. It is important that the airport maintain an up-to-date Capital Improvement Program. The airport may need to be able to act quickly to get funding if it is available. Given the possibilities of market fluctuations, the airport should focus investments on improvements that will facilitate a myriad of market demands.
5. The airport can attempt to mitigate the negative effects of global tourism through procuring goods and services through local providers. With the frequent marginalization of the local population when foreign tourism takes over, employing area residents and local businesses can prevent the isolation of the local population. Additionally, goods purchased within the country will help the benefits of tourism revenue stay on the island.

This scenario has many implications beyond just the airport. Though beyond the scope of this project, the following are several recommendations for government officials and politicians to consider:

1. All developers should be required to improve infrastructure as they build resorts and hotels. Impact fees should also be considered, since the tourists will put many stresses on other infrastructure and services as tourists.
2. The government needs to start education and training for service jobs and related tourism jobs. Business skills and foreign languages will be a few of the skills needed for the tourism industry.
3. There should be an organized effort to connect local businesses to communication technology. New information technology and networks such as the Internet have an important affect on the trade competitiveness of developing countries.
4. STP needs to provide much stronger security for potential landowners and investors, including the ratification of the International Convention on the Settlement of Investment Disputes. Both the citizens of STP and outsiders need assurance that their long-term property investments will be secure from arbitrary and capricious government actions.
5. To improve the provision of basic supplies to support the tourism industry, and a wide variety of new business opportunities coming from increasing local incomes, government should develop policies that support more robust and competitive commercial sector. This would include financial incentives that overcome the monopolistic tendencies such as restricted licenses and distribution agreements.



## SCENARIO 1B: A TALE OF TWO ISLANDS

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This scenario breaks from the paradigm where development primarily takes place on the island of São Tomé. In order to encourage rapid agglomeration, Príncipe is de-regulated while São Tomé becomes extremely restrictive to growth and development. Following the loosening of regulations, intense tourism development focuses on the island of Príncipe. With little exception, the government of STP turns over the entire island to resort development with the possibility for cruise ship terminals, casinos, all-inclusive resorts, and the like. This growth creates the availability of large sums of capital necessary to construct a new international airport on Príncipe. Resorts on Príncipe could possibly consume the entire island with the exception of the existing national parks.

This scenario provides possibilities for a future where the country's primary international airport is in a new location. It was impossible to designate a new location for the international airport without a detailed engineering study. However, the desire to include Príncipe in discussion about future development presented an opportunity to consider the smaller island for this relocation. Knowing that the island of São Tomé would still need a domestic airport, the current airport location continues to be used but with significantly reduced pressure for expansion. Although the current location is not abandoned, this reduced pressure meets the purpose of the scenario.

This scenario allows for a very different approach to the needs and requirements of airport expansion. The current airport size and capacity becomes adequate for some time while the bulk of the traffic is shifted to the island of Príncipe. During the interview process, individuals repeatedly cited transport of tourists as the reason that the airport needs more capacity. In this scenario, the final destination is primarily the island of

### Narrative:

Tourists sit around a table enjoying a morning cup of coffee at a packed internet café in the International Airport on Príncipe. Looking out the huge bay windows at the picturesque beach and sparkling water they could see artisan fishermen working out in the bay. Around them the tinkling of coffee cups mingles with the conversations in four or five different languages. A waiter walks by and bumps the elbow of one of the patrons spilling dark brown coffee on the white tablecloth.

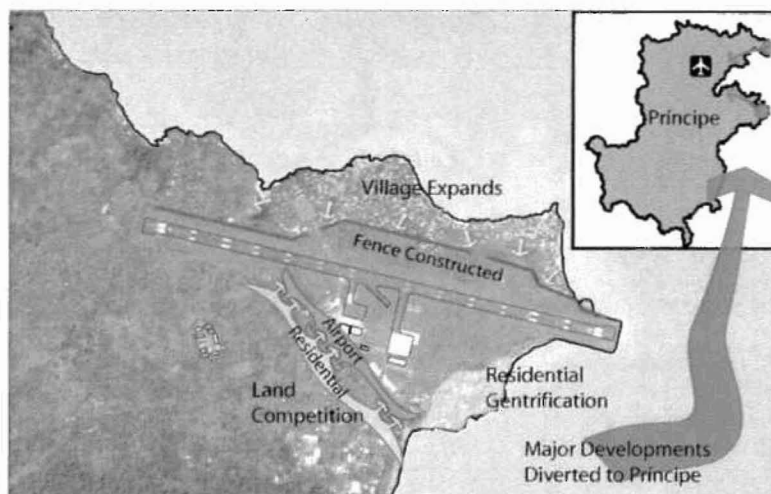
"Excuse me sir," the waiter hurriedly stammers, "There is not much room and I didn't mean to bump you."

"That is alright, have you seen Marcos this morning, he is supposed to be our guide for today." Just then they hear Marcos come in.

"Bom dia meus amigos, and welcome to my café. My name is Marcos Diogo, and I trust that your stay in my hotel was pleasant."

They discussed the weather, some politics and eventually the topic came to the tourism business that was booming on the island of Príncipe.

*(continued on next page)*



SOURCE ORTHOPHOTO: GOOGLE EARTH

Figure 30: A Tale of Two Islands: Pressures and Forces Map

Príncipe, where the large resorts are developed. Constructing the new airport on Príncipe isolates the majority of the country's citizens from tourism. This immediately reduces the pressure at the current airport for expansion since it will primarily service the São Tomé residents.

## DRIVING FORCES

1. *Tradeoffs.* A belief exists that an international airport in Príncipe could satisfy most of the country's air transportation needs. The agglomeration of tourism development/activity on Príncipe makes it



"Well let me tell you my friends, the decision to build an international airport and develop tourism on Príncipe instead of São Tomé was a milestone in our Nation's history. What happened was that around ten years ago some government officials with ideas for a brighter economic future began to build an international airport on Príncipe and they also allowed large-scale tourist resorts to be built on Príncipe. The resorts did very well by marketing the natural beauty of Príncipe and creating strong connections with other countries. Very few people foresaw the amount of revenue that was generated from those first resorts. Once those first resorts started doing well, others followed until now there is an International Airport here and plans for a cruise ship port."

"My cousin, Tobias, now works at Trump's Queen Mary Casino and earns a decent wage, but it sure isn't the life I'd like to be involved in. You should hear the stories he tells of how investors and development are taking over the island, yet I guess this could be considered a mixed blessing. The country has seen increased revenues, but I worry we may one day lose control of the island if the government loosens up on any more regulations protecting our precious resources."

Marcos nods across the room and continues, "You see those men over there in the corner? I think they are with another group of developers. They have been talking all morning about the increasing investment value of land here, plans for more hotels, and their dreams of making this country the next Ibiza, the party island of Africa. Those types come through the Príncipe International Airport all the time. They are trying to find easy investment opportunities on São Tomé now that we see Príncipe doing so well. They talk big money, but the government is actually putting its foot down to preserve our home on São Tomé. Príncipe is theirs, São Tomé is ours. The building of the International airport and many resorts have generated large tax revenues for the government and given us a fabulous, local place to get away to party, relax, and experience some modernized establishments, but after I am done here it is nice to know I can leave the tourist behind and go back home to São Tomé."

a suitable place for a new international airport, thereby eliminating the need to land in São Tomé. This new international airport would become the embarkation point for the majority of the international traffic while the São Tomé airport would continue to serve the general needs of the citizens and government.

2. *Coalition and cooperation.* There is an ability to construct a strong political and social desire to focus tourism development on Príncipe. Príncipe has been described as a major natural asset to the country and is recognized by the citizens for its beauty (Coelho 2007, Pereira 2007). Between one-third and one-half of the island has already been designated as a national park. A significant amount of development to occur on the island relies heavily on a strong political will and would require 'organization' in order to make this happen along with an understanding of the benefits and trade-offs.

3. *Agglomeration magnified by the small island.* A belief exists that Príncipe would lend itself particularly well to the agglomeration of resorts. The island's size and location make it an opportunity for the entire island to be developed with tourism in-mind. With an identity such as Treasure Island or Fantasy Island, the island 'is' the resort; populated by the agglomeration of several large scale resorts. This all-inclusive resort island would have an identity of its own. Tourists recognize these two islands are the ideal vacation spot in West Africa.

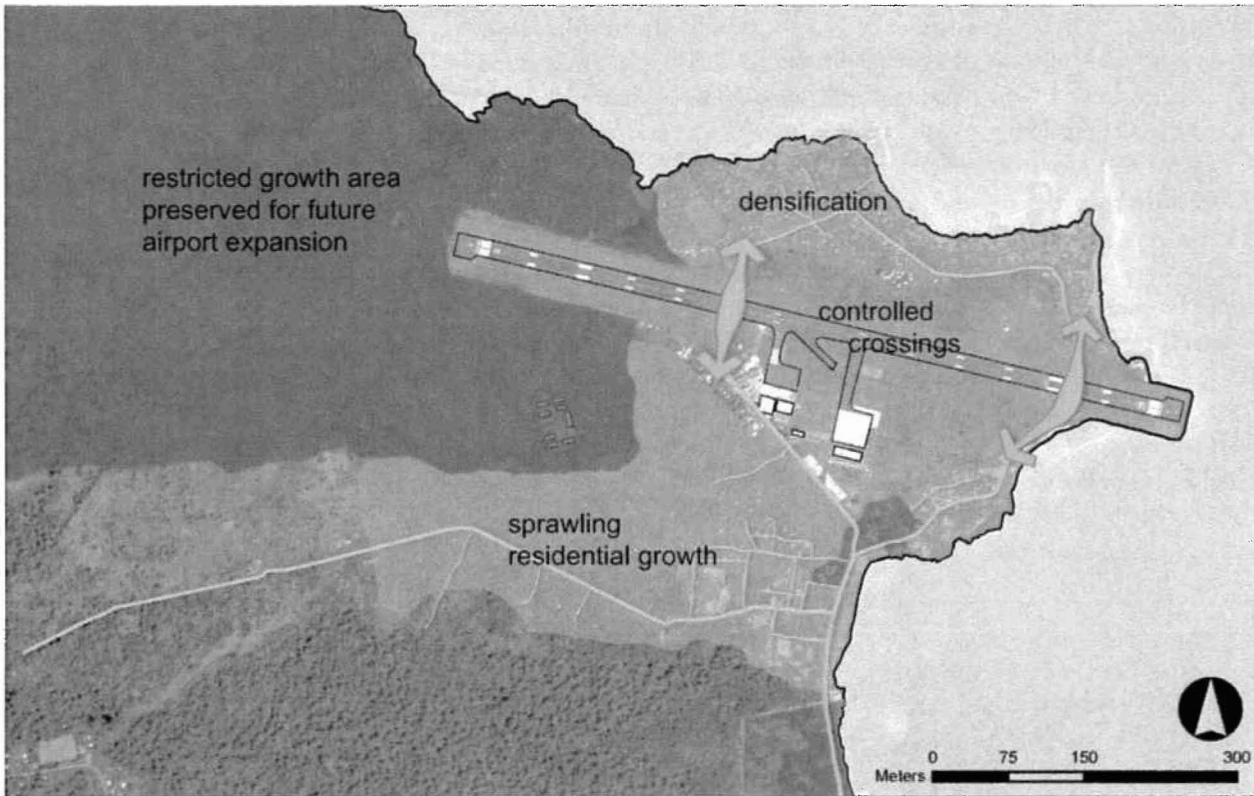
4. *Reduced competition / relieving the pressure.* There is a benefit to reducing the land competition in São Tomé created by the desire to expand the airport to meet the tourism demand. While all of this activity is occurring, conditions remain relatively unchanged on São Tomé. The pressure for airport expansion is removed, which allows the villages of Praia Cruz, Praia Gamboa, and Praia Loxinga to continue at their present locations.

## EFFECTS AND IMPLICATIONS

Many changes will occur quickly on Príncipe. Massive amounts of foreign investment will reshape the island and bring wealth. This scenario assumes some degree of environmental degradation will occur. The primary sources of destruction (large-scale resorts and mass tourism) will be on the island of Príncipe. This creates a degree of separation for the environmental assets on São Tomé while still permitting the large-scale economic development to occur. Socially, the residents of São Tomé are isolated from many of the negative impacts that accompany mass tourism.

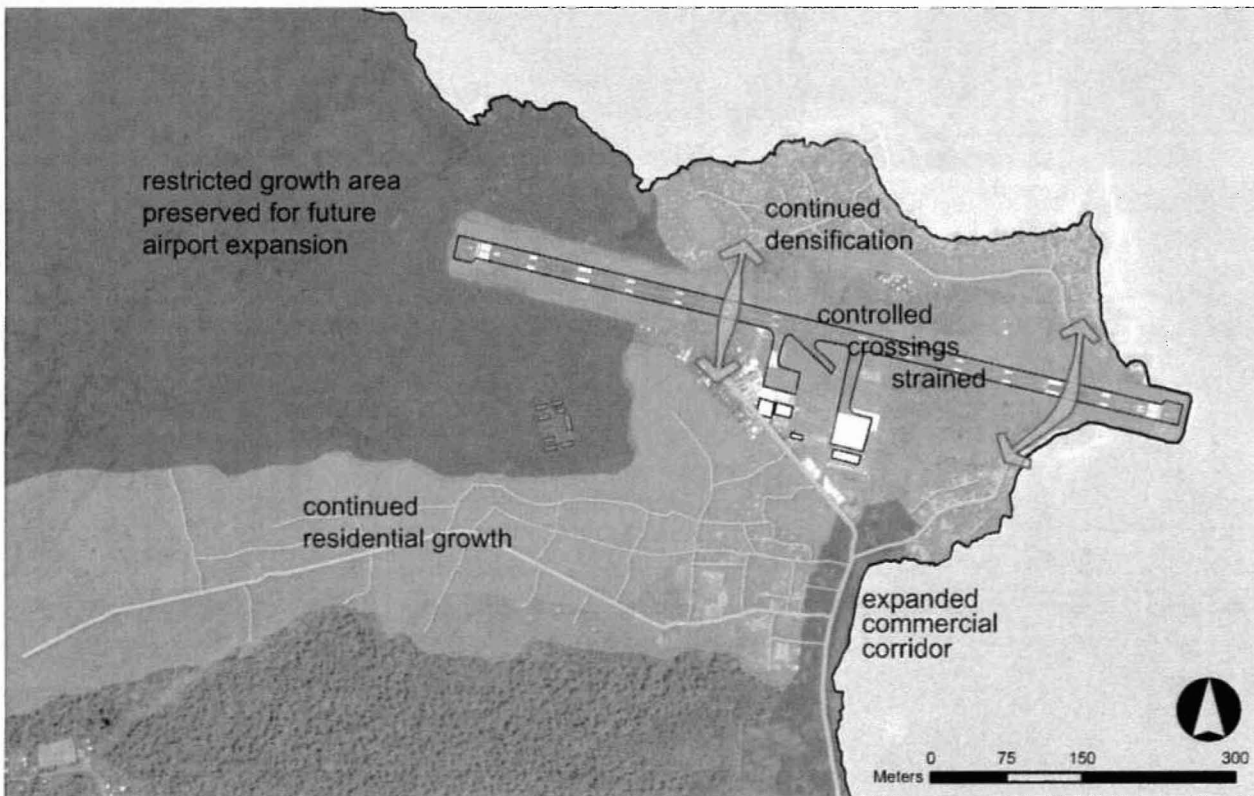
### Economic

In this scenario, the petroleum industry will have two relationships with the development of tourism on Príncipe. First, petroleum could be a potential method of financing the infrastructure development



SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 31: A Tale of Two Islands: Short-Term Change.** The frequency of air traffic is low enough to allow for continued crossing of the runway by the villagers. While the security measures such as the fence are put in-place, access is allowed in a controlled manner at the two locations shown. This allows for continued growth in the population of these villages without displacement.



SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 32: A Tale of Two Islands: Long-Term Change.** Residential sprawl continues south of the airport as a commercial corridor develops along to the road leading to the airport. The villagers continue to cross the runway in a controlled manner however the frequency allowed is lessening because of increasing air travel (over the long-term).

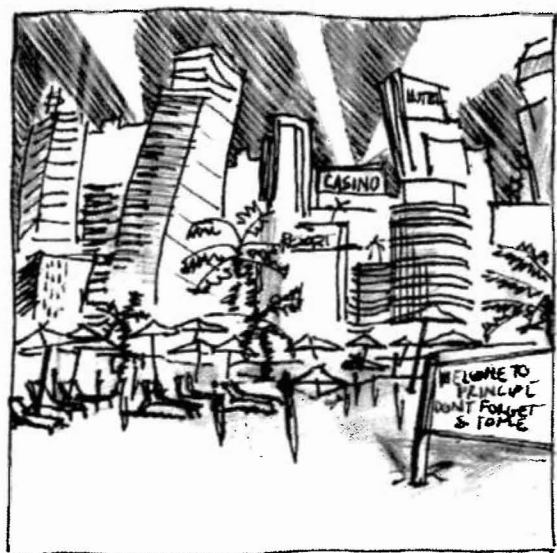
and improvements needed to support tourism expansion. Revenue from oil exploration would best be used to improve the infrastructure in support of developing a sustainable tourist destination. This is an approach has been successfully demonstrated by the Emirate of Dubai where oil has been used as the start-up capital to diversify their economic base. Realizing that its reserves were small and expensive to extract, Dubai has been careful to invest in a diversified economy before the oil dries up (Hvidt 2007). Restraint in the short-term will aide in ensuring continued prosperity in the long-term.

The second relationship comes from the ability of the petroleum industry to provide a suitable tourism market (rest and recreation for workers, holidays for wealthy executives, etc.). Notable, this large and mostly untapped market already exists and has little dependence on whether STP itself benefits from commercial oil discovery. The proximity that STP (and especially Príncipe) enjoys to this West African market creates a high potential for successful tourism growth. Capitalizing on the European market and creating the “African Caribbean” is something that nearby Cape Verde has pursued with annual growth rates of 23 percent (Twentyman 2007). STP has the potential to capitalize on this concept with a location that will be accessible to the new-wealth of the continent.



BRIDGETTE RICHARDSON

Figure 33: Sketch: Quiet beach resort located on the island of São Tomé



BRIDGETTE RICHARDSON

Figure 34: Sketch: High density, all-inclusive resorts on the island of Príncipe

The residents of São Tomé will realize that if they want to join the new economy, they will have to be willing to move to Príncipe. However, the small land area of Príncipe will limit the number of citizens that can afford to live there. The service-related jobs that will be available will likely not provide a high standard of living. Low-wage jobs will abound with most of the money staying in the hands of the foreign investors that own and operate ‘the island’. Foreign nationals brought in by the resort owners will likely fill the middle and upper management positions.

Job creation is a direct benefit of tourism structured economies. In the Caribbean, it has been shown that 1.15 jobs per hotel room were created (Sustainable Tourism Development 1996). Although many of these will be labor-intensive and unskilled jobs, the tourism growth also creates the opportunity for expansion of linked sectors in the economy that provide goods to the tourism industry. Because of the abundance of low skill / low paying jobs, the country’s citizens may not see much economic benefit from this development scenario. The isolation that keeps some of the negative effects away from São Tomé also isolates the citizens from the economic gain. Additionally, the United Nations Small Island Developing States’ report, *Sustainable Tourism Development in Small Island Developing States* identifies the potential for marginalizing of fishing and agriculture as well as weakening “the linkages of other sectors with tourism reducing the benefits derived from the tourism industry” (1996).

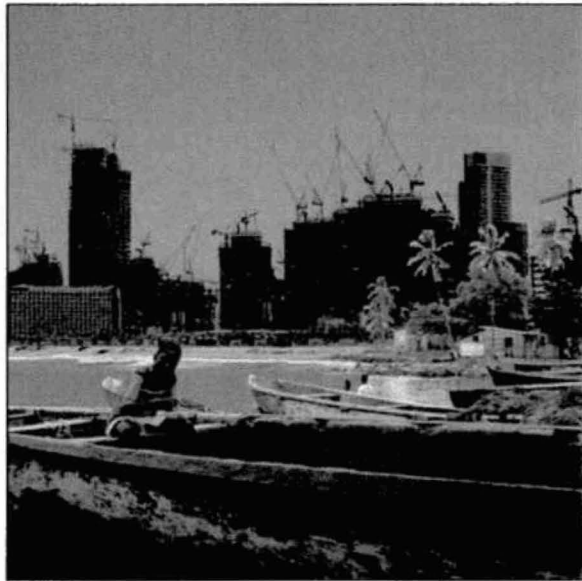
### Social

Benefits of large-scale development on Príncipe will result in improved social programs and government spending on São Tomé. The booming economy has the



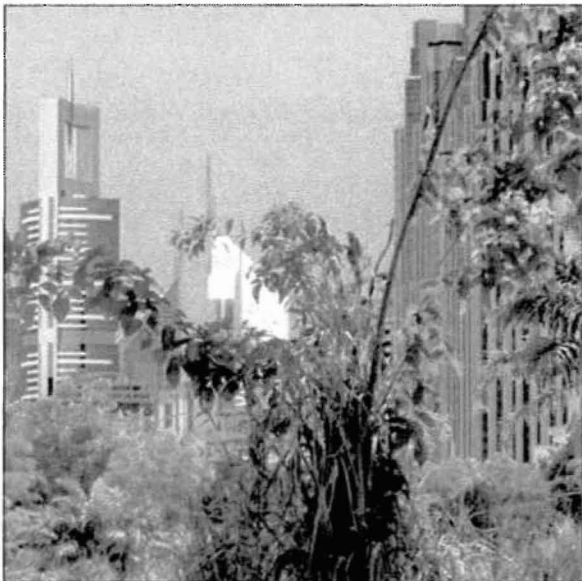
potential to provide government tax revenue. The ability to increase spending on social programs will provide for opportunities to improve healthcare and education. In fact, citizen will need advances in the education quality in order to be more competitive for middle and upper management positions at the resorts.

Villages on Príncipe would cease to exist as they do today. The residents that do not want to adapt to the tourism economy will move to São Tomé, while those that remain would quickly become urbanized. The inflationary effects of tourism development on small islands has been shown to quickly inflate the price of real estate beyond the reach of the local populace (Commission on Sustainable Development 1996). This will further burden the remaining residents of the island. Although the Príncipe residents will carry this burden alone, there will likely be a smaller social impact than with scenarios that displace the fishing villages on São Tomé. As a comparison, the population spread across Príncipe (12,000) is only slightly more than that of the combined fishing villages (est. 10,000). Thus, the effects of displacing portions of the Príncipe population will likely affect fewer people.



BACKGROUND SOURCE: [WWW.CONDOHOTELCENTER.COM/ALERTS/CUBE.HTM](http://WWW.CONDOHOTELCENTER.COM/ALERTS/CUBE.HTM)

**Figure 35: Photo Collage: Traditional ways are overrun by the rapid urban growth.** Background image: \$80 billion of real-estate projects underway in Dubai.



BACKGROUND SOURCE: [HTTP://WWW.BDONLINE.CO.UK/STORY.ASP?SECTIONCODE=427&STORYCODE=3083935](http://WWW.BDONLINE.CO.UK/STORY.ASP?SECTIONCODE=427&STORYCODE=3083935)

**Figure 36: Photo Collage: Urban resort development encroaches on the tropical forests of the national park.**

The current way of life on the island of São Tomé would persist with slow modernization in the short-term. The social effect on the majority of the country's population will be minimal because 150 kilometers keep the development from influencing their lives. This would continue for as long as the government can keep development pressure away from São Tomé. Unfortunately, the insulation that keeps the culture from being negatively impacted will also prevent much of the benefits from reaching São Tomé as well.

An increase in Príncipe's population will be required to support the employment demand. This will increase the social connection between the two islands as many workers travel between the two in order to visit family (or adopt a rotational/commuting lifestyle). It will likely become difficult to maintain a reasonable standard of living on the island of Príncipe because the land competition with the resorts will make it expensive to live on the island.

### Environmental

"If not properly planned and managed, tourism could significantly degrade the environment on which it is so dependent" (Report of the Global Conference 1994). A significant change in the environmental conditions of Príncipe is expected as the land-use changes from low intensity villages to high-intensity resorts. As the resorts consume the developable land, the National Parks will begin to feel great pressure not only from development, but also from the traffic of sightseers.

Assuming development is restricted and limited, the island of São Tomé is saved as a whole from massive environmental degradation; however, the specific local conditions of wastewater management and garbage collection will be very slowly resolved. The government will focus infrastructure improvements on the tourism

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industry. This means that much of the spending will be focused on Príncipe and the areas on São Tomé that directly benefit tourism.

Building on Príncipe allows for a minimized effect on São Tomé's environment and a preserved possibility of eco-tourism. Growth of an eco-tourism market is able to be encouraged on São Tomé. However, only a couple additional resorts would be allowed to be built beyond what currently exists on the island. This will be compatible with the minimized impact on the cultural and environmental resources of the island. However, as the finite land resources of Príncipe are developed, the pressure to de-regulate São Tomé will eventually increase. Over time if São Tomé eventually gives in to full-scale development, sweeping ecological damages would likely occur.

## Political

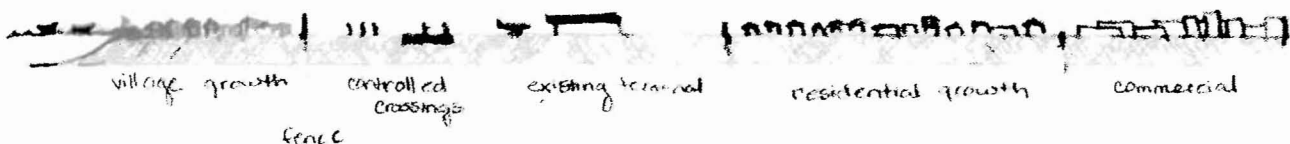
The government will have to be relatively organized in order for this scenario to occur. Politicians will need to overcome the perceived negative attitude of developing anything on the island of Príncipe, create comprehensive plans for the development, seek financing and developers, and complete critical infrastructure improvements. If the government lacks the capacity to complete and implement the effort efficiently, private sector developers with influence and resources may manipulate the government, its policies, and its planning efforts.

Focusing development on the island of Príncipe will change the political dynamic. As tourism takes off, the balance within the government will change based on the economic importance and increased population of the island of Príncipe.

## EFFECTS ON THE AIRPORT CAMPUS

Moving the heavy load of the tourism industry to the island of Príncipe will significantly reduce the demand for a large international airport facility on the island of São Tomé. The existing airport facilities will service increased domestic travel to Príncipe, diplomatic travel, international travel of its residents, and the much smaller eco-tourism that could be based on the larger island. None of this will require much change to the airport campus and its facilities. Only minor investment is required to conduct minor repairs to the runway and security upgrades to the passenger terminal. The current terminal and runway can continue to be used until the end of their useful life. No large expansion of the passenger terminal or construction of new facilities will likely occur, because with small upgrades, the current facilities will be adequate.

The fishing villages of Praia Cruz, Praia Gamboa, and Praia Loxinga will be able to remain in their current location because locating development on Príncipe will remove the pressure for the airport to expand. In the near future, frequency of flights will neither increase nor decrease at this airport, which allows the villagers to continue to cross the runways (at controlled access points) in order to reach the city. Since there is little need to displace these villages, it will become politically acceptable to recognize these urbanizing areas by providing full utility services of potable water and sewer.



BRIDGETTE RICHARDSON

**Figure 37: Land-use Section - A Tale of Two Islands long term change:** Village and airport co-exist when the competition for land is reduced. Additional residential development occurs on all sides of the São Tomé airport.



Residential sprawl will continue in the south and gentrification will continue in the village of Praia Francesa to the southeast. Restricting development of any kind to the west of the airport allows for the ability to expand the airport later. If restrictions are not put in-place and strictly enforced, residential sprawl will likely occur similar to what is seen to the south of the airport.

## DISAPPEARING & EMERGING FUTURES

In this scenario, growth is contained by the natural island boundaries. Essentially, the entire island of Príncipe could be de-regulated and allowed to develop. While this would result in extreme loss of natural resources, the natural boundary of the seashore would keep the development from extending across the island of São Tomé.

Without an immediate need to expand the São Tomé airport, the adjacent villages can be gradually relocated or reduced in size. A need to move them does not exist in this scenario, but if an eventual expansion of the current airport is deemed necessary then this future continues to be possible. The reduced demand for the increased airport facilities allows for the villages to be sensitively relocated over a longer period of time. There is the ability to implement policy that gradually relocates them across a generation rather than within a single decade.

There is a dangerous 'irreversibility' of this scenario. A full-scale international airport on Príncipe requires long-term development and economic success. It would be economically inefficient to try to move the tourism back São Tomé. Care must be taken in conducting market projections and establishing economic relationships with developers.

Building large-scale developments on Príncipe now allows for a future where two international airports could exist in the future. When the São Tomé airport needs to replace the runway and the passenger terminal, both could be built with expanded capabilities by being built to the northwest. In contrast, building on São Tomé now leaves little ability for construction of large scale on Príncipe later. With continued investment in São Tomé and an expansion of the international airport it will be harder to focus development on Príncipe. The construction of large resorts on São Tomé limits the ability to build the same on Príncipe. Many of which would be needed to substantiate and support the construction of an international airport on Príncipe.

## A TALE OF TWO ISLANDS CONCLUSION

Under this scenario, less economic benefit is expected for the people of São Tomé; however, there is a social benefit of preserving culture, improving education, and expanding healthcare for the majority of the population on São Tomé. The development pressure continues to exist on the island of São Tomé, but the 150-kilometer separation will aid in keeping the harmful effects away from the larger island. This distance provides isolation for the primary cultural and environmental resources located on the larger island. A unique future is created under this scenario that would allow for the country of STP to have two fully functioning international airports.

Reliance on tourism carries risks to the citizens of São Tomé in the form of cheapening customs and traditions and adaptation of local arts and tastes to foreigner preferences. Portions of the population will have to be dislocated in order to develop the necessary infrastructure, local residents will find it difficult to compete with international investors for land, and the increase of employment will be mostly limited to labor intensive / low-wage jobs. With care, much of this can be mitigated

### Recommendations

1. Limit construction and improvements at the existing international airport. This airport will not need extensive improvements because it is adequate for the limited international traffic that it will support.
2. Restrict the development of land to the west of the existing airport campus. This land will be needed if the airport needs to expand its capability in the future (i.e. longer runway). Preserving this land

for airport use is of the utmost importance in maintaining this future possibility. Construction of a security fence should be considered to prevent the encroachment that has occurred and continues around the airport perimeter.

3. Controlled crossing of the runway should be permitted to support the villagers traveling to the urban center for education and trade. Since the air traffic at this airport will not significantly increase, the crossings can occur without disruption to the air-operations. Limits should be made to the locations of the crossings so that they are organized and controlled by airport personnel.
4. Since the airport traffic will not immediately increase, the need to land acquisition of the land to the north is not required. The three villages north of the airport should be fully recognized and supported as a urbanizing area. The government should support with the necessary infrastructure improvements such as potable water and transportation plans.

This scenario has many implications beyond just the airport. Though beyond the scope of this project, the following are several recommendations for government officials and politicians to consider:

1. The people must be convinced of this development scheme. In addition, the citizenry must overcome resistance to the concern that benefits along with the resorts are going to Príncipe instead of to São Tomé. The realization that wealth and investment is going “over there” may challenge the perceived benefit of the plan.
2. Advertisement is a necessity. This scenario requires a comprehensive planning, development, and marketing plan in order to fully realize the benefits of agglomeration. The developments must be shaped in ways that take advantage of market opportunity.
3. Create plans. Detailed plans need to be developed for land-use in order to provide reassurance to investors as well as prevent incompatible developments in the future. Planning should involve all parts of the government considering supplying the resorts on Príncipe with goods; educating the citizens for management positions; addressing sanitation issues; and creating a sustainable tourism market.
4. Invest carefully. Some decisions are irreversible. Infrastructure improvements and airport development on Príncipe should be undertaken with great care to ensure that financial goals will be met. Spending at the current international airport should be limited to improvements needed to support domestic travel.

## BETTING ON TOURISM CONCLUSION

The inadequacy of the country's infrastructure is a primary cause of recent slowed tourism development (Ford 2003). Both *Airport Megalith* and *A Tale of Two Islands* scenarios will require an immense amount of capital in the near-term in order to improve infrastructure. Private investment and public investment in infrastructure supporting tourism will largely drive this expansion.

This rapid and uncontrolled growth comes at the potential expense of natural and cultural resources. While the loosening of regulation may encourage growth, it also leaves the door open for the development to consume the country's amenities, which make it a desirable tourist location. The potential for unbridled growth to spread destructively across the country led the team to consider how conditions would progress differently if the growth were isolated to one island or the other.

The United Nations Commission on Sustainable Development identified two significant risks of over-reliance on tourism (1996):

1. Significant concerns in this scenario are the over-reliance on a single sector or market for economic improvement. If the tourism market is heavily dependant on a single market for its success (such as Africa's petroleum region) then the conditions good and bad of that market will directly affect the success of the tourism sector.
2. Inflation due to land competition, high demand for construction materials, and increased demand for consumer goods. Policy needs to be carefully constructed in order to protect the citizens while maintaining attractiveness for future investment.

In order to accomplish these development goals, regulations regarding land-use and commercial development are loosened. This happens on the island of São Tomé in scenario 1a and on the island of Príncipe in scenario 1b. To some extent, this practice is already being done to attract business. This type of land regulation combined with the increased capacity of the international airport is expected to result in a tidal wave of tourism development.

Over-reliance on private investment and developer initiatives may lead to undesired environmental and cultural losses. Policies and initiatives created to encourage growth and investment need to be carefully framed with consideration of STP's natural and social resources.

There is a need to increase education with a focus on supporting the tourism sector. Unless STP residents are trained for management, marketing, and promotion positions, these tasks will be completed by foreigners with little advantage to the country.

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## SCENARIO 2: LEVÉ, LEVÉ

This scenario represents a slower-paced development in STP. The title of the scenario, *Levé, Levé*, translates from Portuguese to English with the general meaning of “slow, slow.” The team frequently heard this phrase while working in São Tomé. This scenario includes slow growth in expansion of airport facilities and development around the airport. Additionally, this scenario carries a “business as usual” mentality politically, economically, socially, and environmentally. The slow growth model of development effectively limits major economic changes, allowing for preservation of cultural identity and social structure. Incremental planning can be successful in allowing the status quo to continue. Small changes and short-term actions over the long-term, however, can also be unsuccessful and ineffective.

The airport campus sees construction of the security fence, upgraded baggage and passenger scanning equipment that address immediate existing concerns of security and day-to-day operations. The fishing villages north of the airport remain. Activities of the villagers continue to conflict with the airport operations and frustration increases over time. Due to funding constraints from a shift in government priorities, the runway length remains at its current length. Although this scenario sees little change in the current land use pattern around the airport, plans exist for expansion that could be implemented in the long-term. The airport traffic does not significantly increase. Instead, it slowly increases according to slight increases in demand, allowing time for residents and investors to adjust to change as it happens.

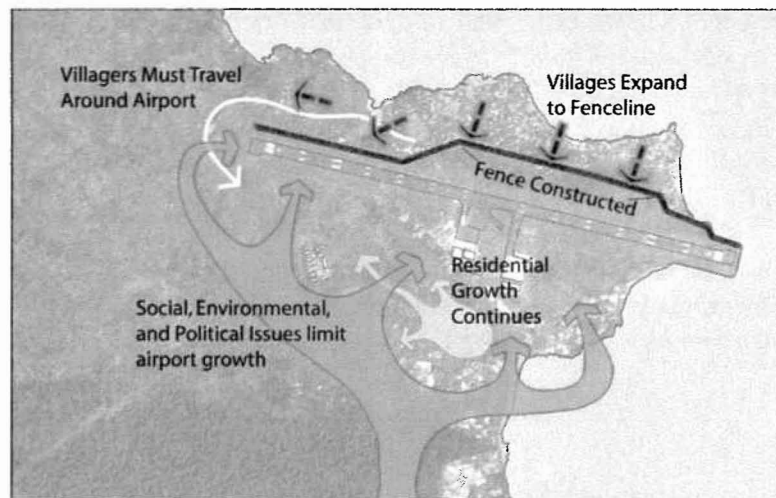
In this scenario, the tourism market does not experience a major increase in activity. It adjusts and grows gradually through small eco-tourism enterprises providing the infrastructure for a continued increase in demand. Future development plans throughout STP prove to be difficult to complete due to political and cultural resistance to drastic change from an increase in development.

### Narrative:

Excavator breathed a sight of relief as the small passenger plane finally touched down in São Tomé on the evening of July 24, 2027. It had been a long flight from Portugal and he was ready to see his family and friends who were waiting to meet him at the airport terminal. Excavator exits the plane and walks to the terminal, “nothing ever changes here” he thought to himself, “it looks just the way it did when I left for school ten years ago.” Outside the terminal, Excavator’s family waits for him in the parking lot, even though the airport terminal was renovated a few years ago there is still not enough room for everyone to wait inside. After warm greetings and embraces, they start the walk home around the airport security fence to Praia Gamboa.

On the walk around the airport his sister Cadence tells him about starting school. She complained about being tired from walking around the airport security fence to go to the school, but is very excited and wants to be a teacher when she grows up. Father talks about the fishing, which is still lots of hard work. In addition to

(continued on next page)



SOURCE ORTHOPHOTO: GOOGLE EARTH

Figure 38: *Levé, Levé*: Pressures and Forces Map

### DRIVING FORCES

1. *Slow Growth.* Economic development and airport expansion development evolve slowly.
2. *Changing Priorities.* Government initiatives do not make a large impact on the airport campus due to changing priorities for using the government’s limited resources. Resources are directed away from the airport expansion to other development projects.

his fishing, Excavio's father has been taking tourists fishing who want to see and experience artisan fishing in the archipelago. He says that the tourists don't know anything about fishing, but they help to pay for food and supplies, and he gets a chance to practice his French and English.

His mother talked about how she had been visiting with some of the other women in the village and had been encouraged by a local NGO to join a craft exchange where home-made crafts and goods can be exchanged for food and other household supplies. There is also a not-for-profit home building organization that has moved into the village. Excavio notices that they have fixed up several of the houses and added a few latrines. Excavio sighs, "this place is getting more and more crowded all the time with nowhere to expand but north along the beach, where am I going to live now that I am back home, and will I be able to get a job, or will I go back to fishing with father?"

The large resort where Excavio had worked in Portugal always had plenty of work for him but he knew that there are only a few job opportunities for people working in the tourism industry in São Tomé and most of those jobs were for small scale eco-tourism ventures. He would have to ask around to see if he knows anyone looking for São Toméans who know English, French and Portuguese.

Suddenly, Excavio was distracted by the exuberant cries of his friends from the village, "welcome home" they cried, Excavio breathed deeply and caught the smell of frying fish and bananas and realized how much he had missed his home, and that it was still here waiting for him just as he had left it.

3. *Political Influence.* Government officials do not want to take a strong stand against the fishing villages to the north of the airport because the officials fear political backlash. Compromise is reached and the government does not force the villages to move.

4. *Land Rights Undefined.* The villagers do not own the land that they live on, and they do not gain land title or additional rights. They are be allowed to continue to live on the land for 30 or more years.

5. *Muddling Through.* Airport administration adopts a policy of using what they have and making incremental improvements to increase revenue. The airport is able to avoid large projects and cumbersome debts.

## EFFECTS AND IMPLICATIONS

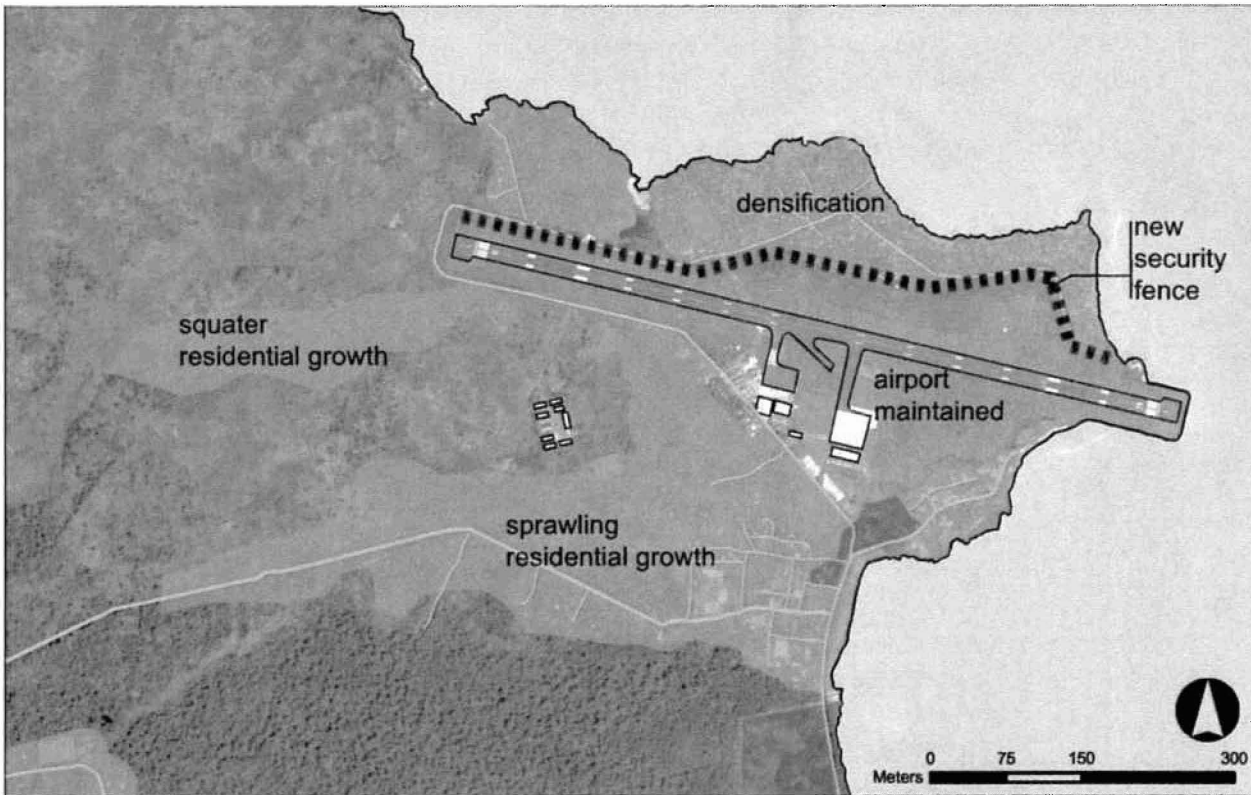
This scenario's slow growth mentality will limit economic growth and change on the islands. Political forces will drive this short-term approach, which has social implications for the citizens of STP. Lack of funding will limit airport expansion and, which in turn provides for Praia Cruz, Praia Gamboa, and Praia Loxinga to exist in their current location. The environmental regulations will not changed, but the environment itself changes gradually according to development.

### Economic

This scenario assumes little to no economic gain from oil revenue or foreign aid for the people of STP. In the same way, tourism will not be a powerful economic force making major changes to the economy. Instead, in this scenario tourism will grow slowly, with eco-tourism growing outpacing mass tourism. A slow growth type of tourism will allow the government to build infrastructure improvements at a pacing matching development. In addition, allowing for expansion in eco-tourism will let STP preserve specified forest areas and cultural sites. A slow growth model will also aid in the support of sustainable economies by endorsing small business development and eco-tourism. A case study on development in Cuba shows that for economies in transition to democracy and capitalism, small enterprise development is highly desirable and essential for creating a growing and sustainable economy (Cruz 2000).

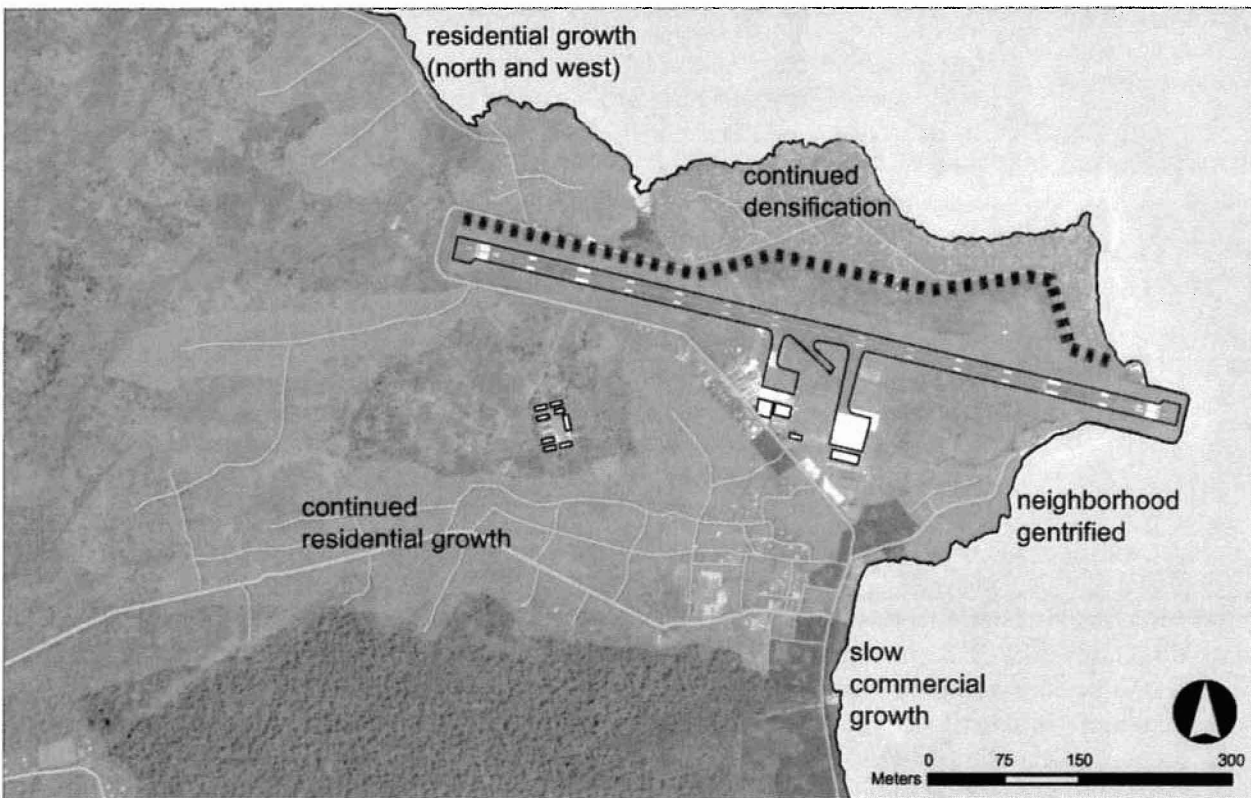
Slow growth development will allow the residents to extract some resources from growth by being somewhat involved in the development and decision-making process. For instance, small investments of local capital could evolve into more success of local businesses and can benefit the citizens of São Tomé. This may allow for a more equitable distribution of wealth as the economy grows. Since it is unlikely that foreign investors will gain significant influence over the local economy, local citizens are likely to own most businesses. Eco-tourism will also provide opportunities for citizens of STP to be tour guides or sell local goods to tourists. In addition, the demand for locally supplied food will increase, which will create an improved market for citizens of STP. A case study on Phuket and Ao Phangnga, Thailand shows how overall positive consequences of eco-tourism in community development, including a responsibility to serve the political, economic, social, and environmental interests of host communities, offset the potentially harmful compromises (Kontogeorgopoulos 2005).





SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 39: Levé, Levé: Short-Term Change.** Current conditions persist. Residential areas surrounding the airport expand and densify. Sprawl of residential development continues onto government land un-checked.



SOURCE ORTHOPHOTO: GOOGLE EARTH

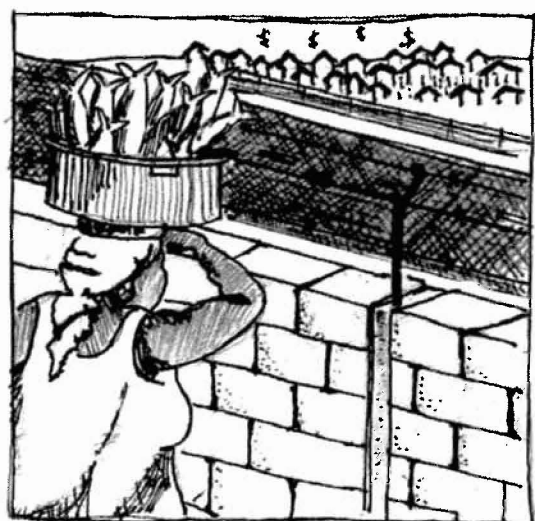
**Figure 40: Levé, Levé: Long-Term Change.** Residential growth increases the conflict with the airport while the airport growth stagnates. Commercial development occurs at a snail's pace without direct involvement from the government.

Even in a slow-growth scenario, many changes will likely occur in the economic system. For instance, initial investment in any type of tourism has potential to fail. It could fail early on, or it could be successful within the first few years and fail during a period of economic stagnation. This is because tourism economies generally benefit from agglomeration, which this scenario does not establish. The point is that change will not happen rapidly in STP. Within the tourism market, dilemmas will arise in adapting to the tourism demands and needs. This will include a language barrier, as local citizens need time to learn foreign languages such as English and French in order to cater to tourists. The marketing sector of STP will need to adjust to the tourism market in areas such as packaging and presentation of goods. Small changes will occur in the economy of STP according to the slow growth paradigm.

## Social

Overall, there will be few sweeping social changes for the majority of the country. The social effects of this scenario focus on the villages north of the airport. Physically, the government/airport allows the villages to stay. The natural growth rate remains high, which results in a much larger population. The residential structures of this population will expand to the airport's security fence, which keeping the advancing village contained.

Over time, the density of the village will increase. While people living in closer proximity to each other will likely increase the risk of infectious diseases, the social networks will be strengthened.



BRIDGETTE RICHARDSON

Figure 41: Sketch: Villager cutoff from the market by airport fence

Permitting the villages to continue in their current location will allow the residents to continue their subsistence-fishing lifestyle. However, the security fence will disconnect the villagers from the city of São Tomé more than they current are. They will have to travel around the airport, which will make it difficult to access fish markets, health centers, secondary schools, and supplies in the city of São Tomé.

These villages could expect to see many similar effects as other places where the poor and rural were further marginalized. In Cuiabá, Brazil, for instance, small-scale farmers were marginalized and socially excluded. They were not given sufficient means to continue to survive in their rural communities most notably due to the loss of agricultural land to large-scale farmers, insecure land tenure, and difficulties in accessing the local market (Gutberlet 1999). In order for subsistence living to continue, STP will need to address distributive and social issues.



BRIDGETTE RICHARDSON

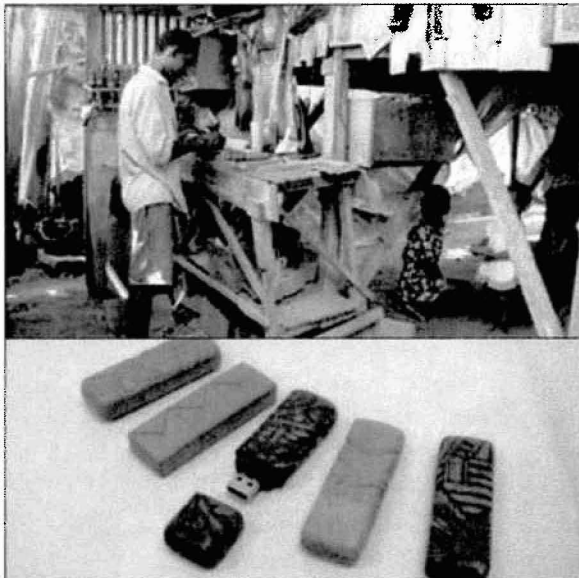
Figure 42: Sketch: Small businesses develop from the bottom-up

Government policy and action in this scenario will not change regarding sanitation, education, transportation, land rights, or healthcare. Specifically, after a short period of adjustment following the building of the airport security fence, elementary education will carry on with little additional investment from the government and increased aid from NGO's. There will be no change in the education arrangements beyond elementary school. While growth is slow, education suffers the same government inability to make decisions and improve /

expand schools. Overall, fewer children from the villages will attend school because of overcrowding and fewer will advance to secondary school. Cultural and social ties will be maintained in the villages around the airport and in the country as a whole.

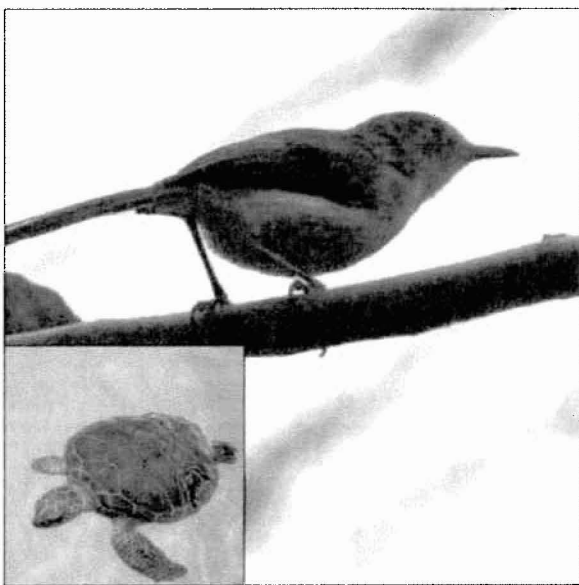
## Environmental

This scenario will see few significant changes to the environmental practices of STP. Governmental policies will allow for the continuation of current practices with no new regulations for environmental protection. No urgent need for development controls will exist because environmental resources do not seem threatened. For instance, eco-tourism development will not appear to threaten the natural environment because of its slow pace.



SOURCE: [HTTP://WWW.CORE77.COM/BLOG/IMAGES/USBCRAFT.JPG](http://www.core77.com/blog/images/usbcraft.jpg)

**Figure 43: Local Crafts, Woodcarver.** Pictured above, this local wood carver is an example of a small entrepreneurial business supported by a slow growth, sustainable economy.



SOURCE: [HTTP://WWW.EARLHAM.EDU/~KLOSTMA/TURTLE-SWIM.JPG](http://www.earlham.edu/~klostma/turtle-swim.jpg) AND [HTTP://WWW.AFRICANBIRDCUB.ORG/COUNTRIES/SAOTOME/IMAGES/ST-PRINIA448.JPG](http://www.africanbirdclub.org/COUNTRIES/SAOTOME/IMAGES/ST-PRINIA448.JPG)

**Figure 44: Eco-tourism Protects Environment.** STP's environment is favorable for eco-tourism development. Eco-tourism will help preserve the wildlife pictured above.

The lack of change in environmental legislation will also positively affect STP, because it will allow for continued subsistence living. This also provides opportunities for the population to adjust in the slow changing environment. The environment itself will also be allowed to adjust gradually. These types of policy also negatively affect STP because there will still be a threat that any change, even slow change, could damage the environment. Specific changes will include increased sanitation and water quality problems and an increase in natural resource conflict. In this way, unregulated development could slowly and unexpectedly reduce the natural beauty of STP. For instance, there may be no perceived need for environmental protection policies due to slow growth. Over time, people may suddenly realize a significant unresolved environmental issue exists. A case study on environmental policy in land management in Zimbabwe shows that any increase in development calls for the streamlining and coordination of environmental legislation to effectively deal with new environmental demands (Bowyer-Bower 1996).

## Political

Political forces and structures will limit development and change on the island through economic indifference. Development plans by government officials will not come to fruition due to turnover of those in office each political term. This means it will be likely that every four years the new civil service will present a new set of plans, strategies, and programs that are inconsistent with the goals and actions of the previous civil service. This turnover will greatly affect policy as well. Recurrent changes in policy will affect the ability of those in government and civil service positions to take decisive action and implement policy. These political circumstances will inhibit more rapid growth and development in STP.

The relationship between the villagers north of the airport and government officials will become a central political issue. The growing population in the three villages will pressure politicians to recognize their concerns. However,

officials will be hesitant to provide utilities that may facilitate permanent population growth directly adjacent to the airport. This means the government will continue to requests for water, sanitation, and transportation in these villages. To compensate for the lack of governmental action, NGO involvement and private entrepreneurial enterprises will seek to meet the villagers' demand for water, sanitation, transportation, and education. In Nairobi, Kenya, NGOs play a large part in improving living conditions, providing employment opportunities, and educating and training displaced and low-income individuals. This case study represents how NGOs successfully took on governmental roles to fill institutional gaps (Muraya 2006).

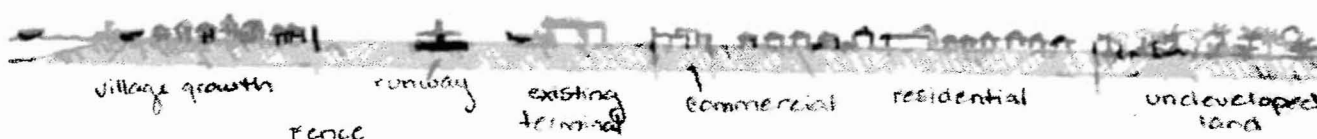
Slow growth will allow citizens to have a role in change through the democratic process. Residents currently believe in voting for representatives according to their own needs; this scenario builds on this democratic participation. If development on São Tomé were to occur rapidly, dialogue and discussion would not have a chance to materialize, thus limiting the influence of the citizenry. In the slow growth scenario, there is a high potential that citizens will be involved with the developments that directly affect them.

This scenario will allow citizens to take action against unwanted outcomes of development. If issues are publicly identified as problems, the use of the democratic process will help mitigate ecological destruction and social harm. With slow growth, people will have an opportunity to voice their opinion. This forces policy makers to face the political and social consequences of decisions that affect conditions. In this way, citizens will not be passive to the slow growth process because they have a chance to democratically environmental influence future development decisions (Butcher 2006).

## EFFECTS ON THE AIRPORT CAMPUS

As described above, the airport campus will make necessary improvements for continued international function by maintaining the status quo and making basic upgrades. However, the airport will not likely be able to meet all international standards. Improvements will include the construction of a security fence and upgraded baggage and passenger scanning equipment. Current buildings will be renovated in order to maintain day-to-day operations, but no new buildings will be built. Due to limited funding, the runway length will not be extended to the west or east and the runway will not be relocated. The airport will maintain the current runway, but will make no major structural improvements. Plans for future extension or significant renovations to the runway will be a distant 20 to 30 years away due to funding constraints. In spite of these plans, the opportunity to maintain the land to the west of the airport for development may decrease due to government inaction.

The three villages to the north of the airport campus will remain. The villages will grow in population and physical size up to the security fence line, which may cause frustrations between the airport and villagers over time. Villagers' irritation will likely stem from lack of utilities, as the government will not adhere to their requests for water, sanitation, transportation, healthcare, or education. Meanwhile, to the south of the airport campus, slow residential growth will continue.



BRIDGETTE RICHARDSON

**Figure 45: Land-use Section - Levé, Levé: long term change.** Intensive residential growth increases the land-use conflict with the airport. Lack of development planning results in un-organized sprawl of incompatible land uses.



The fishing villages to the north of the airport will be central to airport redevelopment efforts. Any type of major airport expansion (though not present in this slow growth model) could become a major health hazard for people living in the villages. It is important to consider that residents may choose to move due to deteriorating living conditions. If another more desirable area exists in which to move and the benefits of moving outweigh the costs, moving may be considered by many residents. Villagers may also consider relocating if the government is willing to provide a suitable compensation and space for relocation.

## DISAPPEARING & EMERGING FUTURES

A slow-growth pattern of development will lead to certain disappearing futures for the islands. Specifically, with progression of the slow growth model into the future, STP will not become the regional hub of business, politics, culture, or transportation. In the long-run, visions of a large expansion of the international airport will fade as funding opportunities are negated. With little initiative from government officials, the chance to obtain large government loans from outside countries or organizations will disappear. STP will not become a major tourist attraction with mega resorts because the main infrastructure will never be put in place for this to happen. Disappearing futures may also materialize due to the presence of ad-hoc planning throughout a period of decades within the slow growth model. It will be difficult for the government to undo incremental planning to put in place a comprehensive development plan.

Beyond this time horizon, the scenario will enable many possible futures for STP. For instance, maintenance of the airport could meet the tourism needs of the country with slow-growth tourism. A more sustainable business sector may evolve as airport revenue grows slowly but eventually allows for better financing options of future development projects. This scenario will also allow cultural identity and existing social networks to continue to benefit citizens. Subsistence living will be enabled to carry on and the quality of life on the islands is not deteriorated. Without major improvements and investments in the airport, it will still be a possibility to move it to a new future location. The slow-growth will provide opportunities for small business skills to develop and local businesses to emerge. These businesses will have the time to get a foot-hold in the economy prior to large scale competition from the global resort market.

## LEVÉ, LEVÉ CONCLUSION

Although this scenario presents a slow growth model, the long-term conditions will be quite different from the present state. Economic improvements are likely to occur within this scenario. A positive aspect of this scenario is that a cautious investment with a lower risk equals a lower chance of economic, social, and environmental failure. Instead of drastically changing the environment and situation of STP, small investment with small returns build wealth. Through time, investment will occur in a large variety and diversity of projects naturally leading to the success of some and the moderate growth and failure of others. This will lead to a slow, but steady growth of the economy as investment increases and continues in successful projects. The investment in a diversity of economic ventures will be central to the success of the slow growth scenario.

The slow growth model will generate positive impacts for STP. In a slow process, more time will exist for adjustment to economic, social, and environmental change. A slow process will mitigate catastrophic change and eliminate the danger from quickly developing the country. Overall, the slow growth scenario will allow development to play to and build on the country's strengths. However, it will tolerate STP's weaknesses to continue to be generally unaddressed by maintaining the status quo. Both the airport and the government should address several recommendations, if this scenario begins to unfold in reality.

### Recommendations

1. Mitigate the negative effects of airport developments on the village, even if politicians do not acknowledge this conflict. Consider a transportation service such as a public taxi or bus around the security fence.



Maintain a dialogue with the villages so that a channel for expressing needs is preserved. Consider trucking water to the villages or providing water in another more technologically advanced way.

2. If expanding the runway is not an option or a goal, then pursue improvements to the terminal that increase airport revenues and enhance the tourist experience. Renovate existing buildings to update and expand current facilities.
3. If development is progressing in a slow growth manner, then use the time to establish sound and agreeable plans. In these address issues of land use, access management, and environmental preservation.
4. If the airport wants to preserve the ability to expand in the distant future, then a stake needs to be made to the land so village expansion does not limit the available possibilities.

This scenario has many implications beyond just the airport. The following are several recommendations for government officials and politicians to consider:

1. Encourage eco-tourism on the island through conservation efforts. A case study on the island countries in the South Pacific concludes, "Designing regional initiatives and implementing them according to local circumstances is a sound strategy for reconciling regional environmental problems and national development needs" (Zurick 1995, 171).
2. Support sustainable economies by endorsing small business development and eco-tourism. A report analyzing eco-tourism discusses the necessity of recognizing and applying the principles of sustainable development to tourism, and the role of eco-tourism in generating economic, social and environmental benefits (Butcher 2006).
3. Create and preserve local markets in order to allow subsistence living in the country. A case study on Tanzania adds understanding of this concept. It examines the persistence of subsistence living in the context of economic and social theory and analyzes the effects of development in shifting from subsistence to a market economy (Waters 2000).
4. Uphold the existence of local STP culture by recognizing and using its role in economic and community development. Recognize the cultural diversity associated with natural areas, particularly because of the historical presence of local and indigenous communities. Some communities have maintained their traditional knowledge, uses and practices, many of which have proven to be sustainable over the centuries (Butcher 2006). A case study on Cape York provides further ideas and hope for preserving local culture in the face of development (McCaul 2005).
5. Encourage the NGO network to provide services and amenities to citizens (Muraya 2006). Make it easy for them to operate and establish a working relationship with government.
6. Encourage citizen involvement in and ownership of the development process by maintaining effective democratic processes. "Participatory processes should be used to educate people about the value of biological and cultural diversity in eco-tourism development, and on how they can both conserve and derive benefits from natural and cultural resources" (Butcher 2006, 150).
7. Be aware of small environmental impacts, which could lead to major environmental damage.

## SCENARIO 3: A NEW TWIST

Maximizing its location within Africa, its unique environmental qualities, and its peaceful but young political state, this scenario provides a “twist” of an alternative economic development strategy for STP. This strategy goes beyond the current beliefs that tourism or the potential oil revenue can provide sustained economic growth. Focusing solely on mass tourism has become a risky venture to which this scenario provides a plausible alternative, while not abandoning tourism altogether. In the “New Twist,” the economy improves with the diversification of business ventures on São Tomé which could include a university for STP and the region of Africa, a biological research park, a renewable energy research and development center, a business conference center, an international financial center, and various forms of tourism. The airport on São Tomé expands at a moderate pace and extensively, because of demand from new economic sectors. It should be noted that while diversification improves the economy, the development rate will take significantly longer than a mass tourism economy. With time though, it becomes a trading hub of knowledge and business in West Africa. Where once slaves were taken and traded from Africa, now businesses and knowledge is exchanged. Seen as the beacon for the continent of Africa, it provides leadership in political, economic, social, and environmental arenas for other nations of Africa.

The country of STP could achieve this economic diversification through many possible avenues. One foreseeable avenue could be if the government of STP took unified action towards sustainable diversification. This could happen through an inventory of the nation’s natural capital and an examination of similar island case studies to develop strategies that would lead to jobs and foreign investment. STP leaders may discover the following areas that the Master’s team discovered as a foundation for potential development strategies:

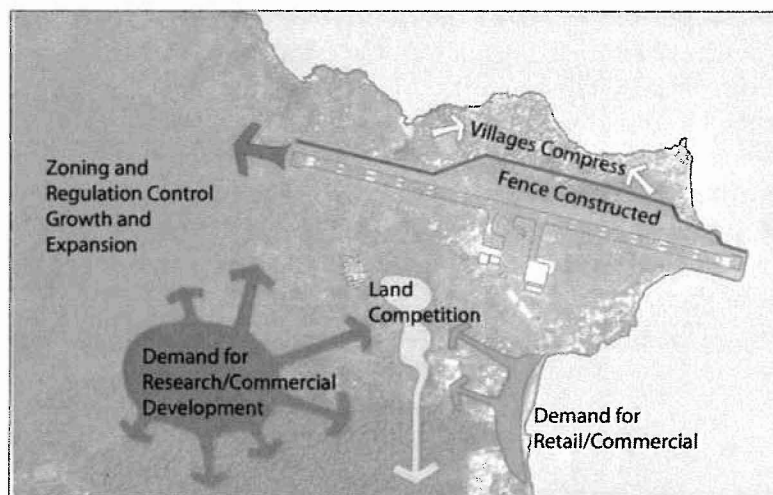
- The regional location of STP is ideal for business and financial activity.
- The unique ecosystem provides a wide array of opportunities for biological and pharmaceutical research.
- An institute of higher education would provide educational opportunity for citizens as well as the regional population (Cox 2001).

### Narrative:

Manela steps up to the podium in front of the large crowd. Everyone has congregated on the lawn outside São Tomé’s new international Airport Terminal for the dedication ceremony of the new policy research center. Manela raises her voice to address the crowd:

I am proud to say that I live in the most beautiful and pristine country in Africa, São Tomé and Príncipe. I have come here today to acknowledge your efforts over the past 20 years in helping to us get to where we are today. Prior to 2007, the country was one of the poorest countries in the world. At that time, there was some expressed interest in São Tomé and Príncipe’s natural capital, oil resources, and prime location, but there was little investment from foreign companies and we had a struggling and unstable economy. Additionally, there were concerns with the environmental impacts of potential developments. São Toméans were weary of relying on

*(continued on next page)*



SOURCE ORTHOPHOTO: GOOGLE EARTH

Figure 46: A New Twist: Pressures and Forces Map

To pursue these opportunities, this scenario assumes that the STP government makes initial inquiries regarding research and educational interest with foreign institutions. Negotiations follow with the interested parties in order to develop facilities on São Tomé that limit negative environmental and health impacts. As the development concepts, designs, and implementations stages occur, involving faculty and students in the process provides fully contextualized designs and plans. As word of these developments

tourism, oil, and the faltering agricultural trade, because it was believed that each would not provide long-term economic strength.

It was then that the leaders of São Tomé decided to pursue a development strategy to establish an education and research center on the airport campus. The main goal of the center was to find ways to establish a diverse economy that was sensitive to the local concerns of São Toméans and that could compete in the global market. The hope was to provide not only immediate benefits, but more importantly, long term benefits to São Tomé and Príncipe.

The efforts of those at the education center have made many contributions to São Tomé and Príncipe. Today, the airport is the busiest airport in Africa and the university is growing again and is graduating the future leaders of São Tomé and Príncipe and Africa. The biological research park has discovered numerous drugs and scientists are on a waiting list to come here. The model to create a sustainable country has resulted in improved infrastructure that does not degrade our island ecology. Thanks to the efforts of the research center developing technology in our cities and villages we are currently non-fossil fuel dependent, the national parks have been preserved, and our living conditions have improved. In addition, tourists and conservation enthusiasts keep coming to see the islands and now your vision is being spread to other areas of Africa. By creating a hub of development adjacent to the airport, they were able to minimize the impact development can have on the environment.

There were many discouragements and setbacks along the way, but through determination, perseverance and commitment to a common goal we saw the building of a model educational, research center right here in our country. On behalf of São Tomé and Príncipe, I would truly like to thank you for making this dream a reality through your hard work and determined efforts. It has not been easy but today our children are reaping the benefits of the hard work that we have invested in their futures and the future of São Tomé and Príncipe.

Thank - you

spreads throughout the international community, it becomes easier to diversify further in business and financial institutions (Flexibility 2007). Other economic sectors, such as tourism, construction, small-scale production, and services, grow with the growth in research, education, and financial sectors. The government takes specific action to ensure the continuation of the traditional industries of fishing and agricultural, as the labor force is diverted to other sectors.

## DRIVING FORCES

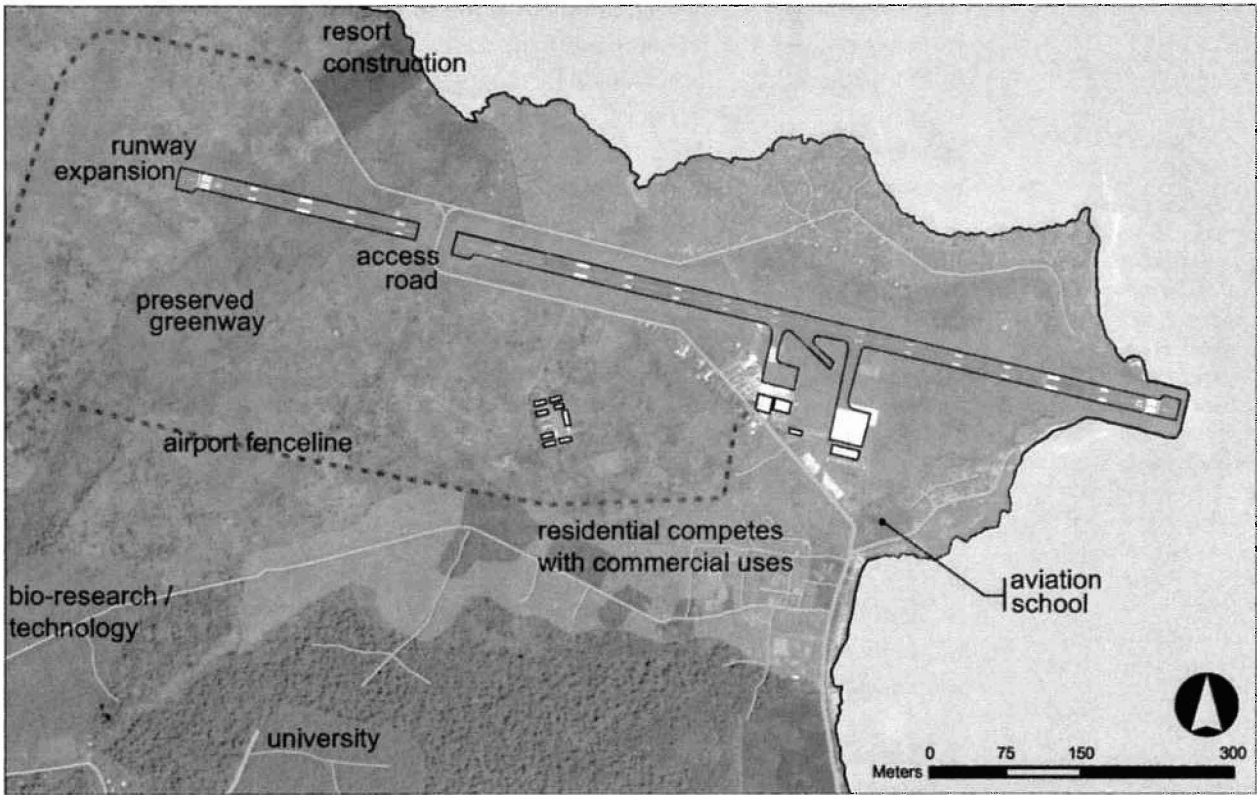
1. *Expanded and improved international airport.* There is a common belief on the island of STP that an expanded international airport is essential to attract future businesses and to serve as the hub for travel.
2. *Diversified Economy.* There is a conviction that a diversified economy is more beneficial to the population than one single economic sector. Investments are made in business sectors that utilize human capital and maximize a sustainable use of natural resources.
3. *Education is highly valued.* While better than many other African countries, there is a movement to increase the current level of education to meet the demands of an emerging nation-state in the international arena. Education is seen as a way to improve quality of life. STP wants to be a leader that retains and exports knowledge to the other nations of Africa and the world.
4. *Maximization of pristine tropical environment.* The unique environment is a vital asset to maintain and lends to an ideal location for research and eco-tourism. With increases of severity of natural disasters in the world, STP is seen as an ideal location with little risk.
5. *Political Unity and Action.* There is a unified political agreement to consider alternative developments by maximizing location, unique natural resources, and human capital identified in a national capital inventory. This unification is demonstrated in a national conservation act, comprehensive land use planning, land rights documentation and legal protection, health and welfare improvements, and the political reform of the civil servant positions of the government, which allow actions to be implemented across political lines.

## EFFECTS AND IMPLICATIONS

Recognizing that a single economic generator will fluctuate with market changes, the country of STP will diversify its economy in the long-term. However, the government will implement environmental protection laws, comprehensive planning, land rights documentation, political reform, and health infrastructure in the short-term. As the

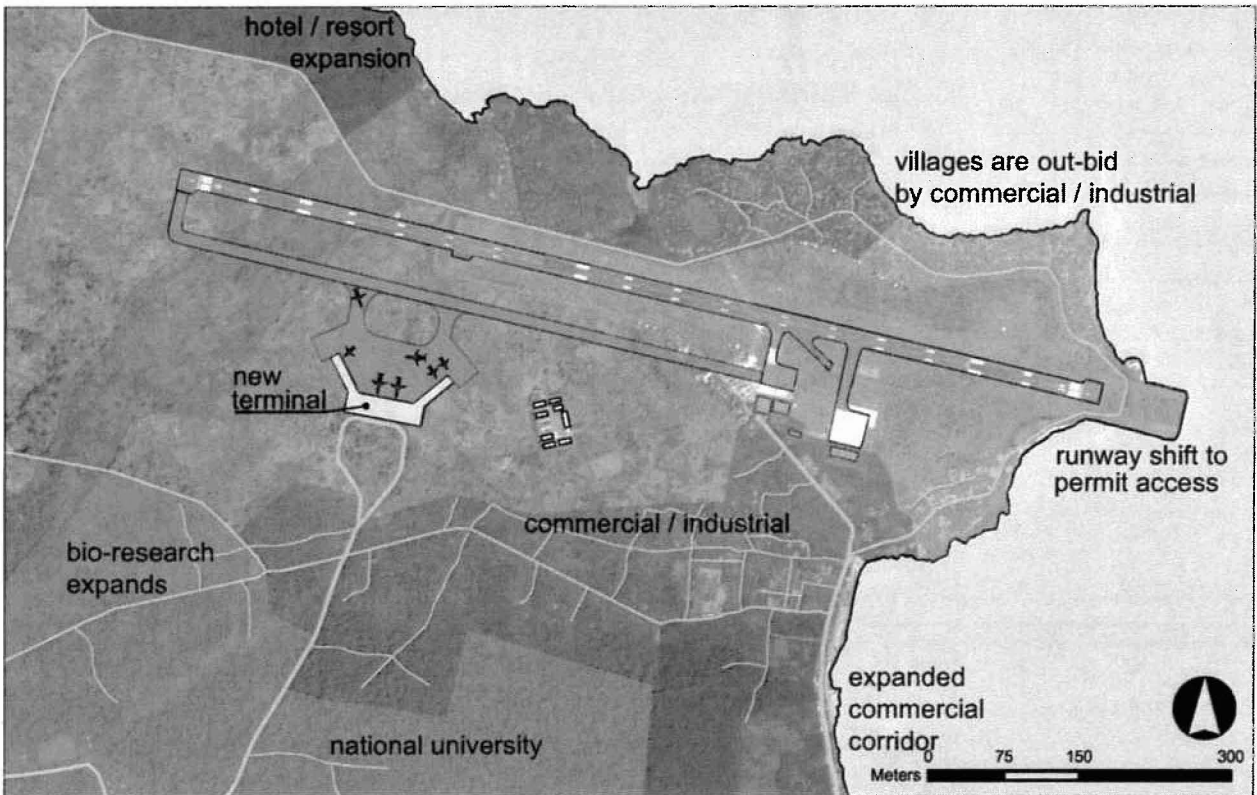
I. Introduction
II. Framework
III. Approach
IV. Findings
<b>V. Scenarios</b>
VI. Conclusion
VII. Appendix

- I. Introduction
- II. Framework
- III. Approach
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- V. Scenarios**
- VI. Conclusion
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SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 47: A New Twist: Short-Term Change.** Villages to the north are provided basic services and the school there is expanded. Access remains to the west while the runway is being expanded. South of the airport, commercial and light industrial development competes with the residential use and the primary school is replaced with an aviation school. Bio-research and educational facilities are co-located in anticipation of the new airport road.



SOURCE ORTHOPHOTO: GOOGLE EARTH

**Figure 48: A New Twist: Long-Term Change.** The villages in the north are bought-out by commercial and light industrial. The lengthened runway is in-use and access is now permitted around the east end. A new / larger terminal has been completed. To the south of the airport, the bio-research and university facilities continue to expand while the residential property has completely transformed to commercial and light industrial uses.



“gateway” to the country, the airport expansion is vital to the future of the blooming nation by serving as the embarkation point for businessmen, researchers, trades people, students, government representatives, and local citizens. Initial investments from foreigners in an education and bio-research center will provide new wealth to STP. This wealth is used for social programs and infrastructure projects like roads, utilities, and an improved seaport.

## Economic

From the interviews, the team found a common belief that tourism similar to Cape Verde is a desired economic engine for STP. However, tourism has begun to show signs of stagnation on Cape Verde (Dependent 2004). Focusing entirely on mass tourism has become a risky venture and this scenario provides a plausible alternative, while not abandoning tourism altogether. The country of STP will diversify its economy over the long-term to include such developments as a new university, a biological research park, renewable energy research and development headquarters, business conference center, and a financial center. In addition, mass tourism will slowly grow, eco-tourism will expand, limited oil funds will be generated, and agriculture products like cocoa and coffee will strengthen through the collaboration of producers, NGOs, research centers, and the university.



BRIDGETTE RICHARDSON

Figure 49: Sketch: Researchers collect data and specimen

With the expanding influence of globalization, an era with a similar magnitude of impact as the Industrial Revolution, a “knowledge economy” has resulted (Sidhu 2007). Acknowledging the shortfall in access to advanced education in the region, the first economic project for the island besides expanding the airport will be a new university. The university will be built on the island to improve education and to retain leaders for STP and the region. The university will provide technical and professional training relevant to STP’s emerging economy. Today, many Western institutions are actively pursuant of overseas collaboration. The University of Georgia has worked with the country of Costa Rica for research and the University of Wisconsin-Madison is active overseas as well (Competing 2007). São Tomé could follow these examples and collaborate with a well-established research and education institution to foster collaboration and development such as the University of Illinois.



BRIDGETTE RICHARDSON

Figure 50: Sketch: Education facilities

With its unique fauna and flora as well as its close proximity to other nations in Africa, a biological research park could be developed in conjunction with the university to explore medicines and drugs. The research park would work closely with the university in remote locations of the island. As a popular economic development strategy in United States for regions faced with economic decline over the past 20 years, research parks have proven to stimulate regional economic development by refocusing the economy and providing technological innovations. “Research parks attempt to harness “creativity” and innovation to spur economic development” (Drescher 1998). This concept has spread to other nations in the world with Dubai opening a leading world-class economic zone and industrial complex called Techno Park.

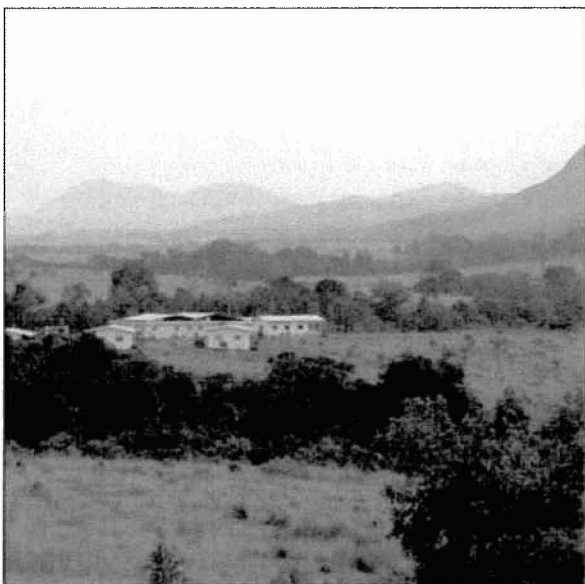


The secret of São Tomé's beauty and climate would attract business people across the world. This scenario foresees an old plantation along the northeast coast transformed into a conference center. This would likely be near new resorts and would become a vibrant economic hub for the island. A financial sector of the economy, attracted to the businesses climate of the peaceful and stable nation, would locate a new financial center in the center of São Tomé City. With favorable rates, it would be possible for offshore banking to develop on the island, similar to the island of Bermuda. Renowned for its international banking policies, it has played a part in making Bermuda the highest GDP per capita in the world (Bermuda 2007). As business increases in São Tomé, tourism will grow to accommodate longer stays of business people and families. Secondary effects, such as increased tourism development and the provision of goods and services, will be expected to help diversify and sustain the economy.



SOURCE PHOTO: INFO.IEPASSPORT.ORG/IMAGES/STELLENBOSCH\_CAMPUS2.JPG

**Figure 51: University / research center developed.** Exchange of students and scholars provides link to Europe and Americas.



SOURCE PHOTO: WWW.WCSGABON.ORG/TRAINING/TRAININGCENTER.JPG

**Figure 52: Research outposts placed sensitively in the landscape** in areas that provide research opportunities through the country.

With growth in these business sectors, the government will be much less reliant on foreign aid. Foreign investors, oil drilling fees, and increased tax revenue will pay for improvements to infrastructure including roads, bridges, and a seaport. Foreign investors will be attracted to STP due to STP's willingness to embrace technological improvements like telecommunications and renewable energy and the stable political environment. The government will invest oil funds in improving expertise in the telecommunication and renewable energy fields.

In this scenario, there is a significant time lag between initial investment in these diverse sectors and economic prosperity. While slow in the beginning when the investments are established, the economic production increases exponentially as these knowledge sectors feed off each other. In the long-term, citizens of STP will enjoy a rich diverse economy and see a dramatic change in economic gain and improved quality of life. The fruits of a diverse economy can be seen in the variety of wages and many different types of jobs choices. However, there are possible implications of foreign research and financial jobs being taken by immigrants and the benefits only going to an educated few. For those who remain at current education levels, there may form a gap between labor intensive and knowledge intensive jobs. In addition, with the growth of the business sectors, there is a tendency for misallocation of funds due to the greater influence of foreign investors. There is often extreme pressure from developers through offers of bribes and kickbacks to sway the use of public funds. The response to this misallocation is often social strife between the public and dealmakers.

### Social

The late booming economy will provide the government with tax revenue, which could be spent on social programs. With healthcare and education as high priorities, there will likely be vast improvements in these areas. The hospital will be upgraded, but attempts to staff clinics with STP citizen will be difficult with a shallow

pool of trained professionals. Recognizing this labor deficiency, the STP government will need to expand its university grant funds to send a small number of people abroad for training. Water treatment facilities and potable water systems will be built to provide drinkable water to all citizens. Waste treatment facilities will be built on the island to treat sewage and waste disposal and recycling programs will be implemented similar to the African Conservation Trust. The Trust addressed national waste problem by removing litter, initiating recycling, and created jobs in waste industry (Recycling 2007). STP could follow a community awareness program from KwaZulu-Natal, South Africa in making sure cholera outbreaks are neutralized (Barrow 2001).

As the development and education improves on the island, the culture will change and may result in a cultural gap between the old and young. The young generation will be highly educated with technology, scientific, and financial jobs, and may adopt western work habits and values. The older generation will have current education levels, less wealth, possible subsistence living, service or labor intensive jobs, and traditional work habits and values. Over several generations, the historical character and culture of the island could be lost. Where once families had defined roles of men and women, the new jobs could cause problems among the family roles such as to the village to the north of airport. The number of fishermen could also be affected in the village, as more go into other sector jobs. However, the society would benefit, with the improvement of standard of living and the closure of the middle class gap with the new jobs.

Assurance of property rights through documentation and legal protection would be seen as a fundamental right of STP citizens. This could be accomplished with the help of an NGO working with the government and citizens. In this scenario, government land would likely be leased in order to maintain control of development. The government would need to keep accurate and public records of private sales and rental agreements with the government. Future business growth and investment will be encouraged through the implementation of the civil program. The loss of capital due to the informal economy will be minimized and more people will be able to leverage their property to gain financing for entrepreneurial endeavors.

The population will probably grow dramatically due to improved health and immigration. Eventually, as the country moves along the demographic transition, there will be decreases in birth rates and lower total population growth rates. Where once only petty crime existed on the island, property crimes may increase. The need for a more formidable police force will create both jobs and strain on the public budget. Additionally, with increased connections to Sub-Saharan Africa, there is the threat that HIV/AIDS could become a problem for São Tomé. The AIDS awareness campaigns to educate the population will be increasingly important.

## Environmental

Since this scenario sees the protection of the island's natural capital is a central political goal, the government will develop firm environmental policies and will resist for excessive concessions. Through the comprehensive plan, the government could delineate areas that for protection. Additionally, the government will require proper environmental impact studies to be completed for large developments. The pristine tropical environment will be maximized for research and eco-tourism purposes.



BRIDGETTE RICHARDSON

**Figure 53: Land-use Section - A New Twist long term change:** Intensive commercial and industrial growth surrounds the international airport. Residential developments have been displaced politically and through competition for land.

While resorts consume the developable land along the coast and at roças, the National Park Obo will feel great pressure not only from development, but also from the tourist traffic. As the finite land resources are developed, the government will need to stand firm on cultural and environmental protection. Additionally, all beaches should be maintained as public access. With the increase of visitors to the islands, there will be a threat of invasive species that could have a harmful impact on the existing pristine environment.

Another government initiated development project is the exploration of alternative energy usage. The government and the research center will encourage the use of wind, solar, geothermal, low-impact hydro, and tidal wave power, and a local center of energy research and development will be started. The center may collaborate with companies from Europe to develop alternative energy solutions for developing nations of Africa. The development of alternative transportation with minimized automobile usage and high fuel efficiency would also be a likely government initiative in this scenario.

## Political

In order for this scenario to develop, there will need to be unified political action in the early years of this scenario. This may enable projects, such as a national conservation act, a comprehensive land use plan, land rights documentation and legal protection, and health and welfare improvements. To provide continuity and stability, a reform in civil service qualification will be needed. They should be hired based on education and experience, be evaluated based on performance, and be permitted work independent of elections and political party affiliation. Only high-level officials should be re-appointed through democratic elections. The sweeping government action in this scenario will require politicians to develop plans and projects across party lines. This will allow continuity when new administrations are elected to office.

The reform in politics also will address government funds. The funds will become “open book” and will be audited to ensure corruption of funds is limited. In order to address more fundamental to development, the government could undertake an education campaign to include values of integrity and virtue. While there will likely be pressures from private sector developers with large influence and resources, the government will need to be resolute in its determination to implement its policies and comprehensive plan.

## EFFECTS ON THE AIRPORT CAMPUS

As part of a coordinated plan for the island, the airport will procure the land to south and west of the airport. Unlike scenario 1a (*Airport Megalith*) where the government confiscated the three northern villages, this scenario allows them to be relocated by the economic forces of third-party investors.

The current terminal will be expanded and old facilities renovated in the short term to generate a “gateway” for the future growth. The current security fence will be completed and guarded. A buffer zone and an access road to the airport will be designated around the airport to allow for a future terminal, service buildings, and training center. The STP comprehensive plan will include these areas. Development around the airport campus to the south, west, and north will likely include elements of the comprehensive plan such as residential districts, commercial areas, light industrial zones, financial centers, research parks, a university, a conference center, and city service facilities.

In the long-term, the airport will build a new terminal with modern amenities. The airport will also extend the runway, and the existing runway will be rebuilt structurally. The development of the airport will initially limit access to the village, but the access road to the villages will shift to the east side of the runway along the water. To the southeast, the old school complex could be changed into a training center for aviation, as the school downsizes and relocates. The training center would be useful in providing technical, language, and service classes.

While the land rights of the village property will be held by the airport/government and the villagers will hold squatter rights, the government will need to conduct negotiations with the villagers and provide them “private investor relocation funds.” The government will allow private investors relating to airport functions to purchase the village land at a fair rate in order to encourage villagers to move to another site. To encourage long-term investors, the government will provide utility improvements in the early years that investors can use the villagers relocate.

The pressure for expansion of the airport campus and surrounding area will continue to be problematic to the villages north of the airport. While the government will provide basic services (water, reliable electricity, waste facilities, trash removal, and school bus service), because the government is willing to invest for future uses, the village will see changes. The government will implement a building moratorium in the village. The airplane noise will increase with additional air traffic, and the travel time to the city will increase, as villages will have to travel around the runway. Life in the village will become less desirable and the villagers will feel a steady pressure to move. More of the younger generations will likely move to other village sites or will move away for education or jobs. As the villagers vacate buildings, developers will redevelop the area.

## DISAPPEARING & EMERGING FUTURES

With this scenario, potential futures disappear while others become possible. A disappearing future is the single agriculture exporting economy. While expending its funds to diversify into human capital investments, the historical agricultural sector has the potential to decline and be “lost in the shuffle.” The island’s culture will dramatically change and potentially vanish. Western ways will promulgate and the island would lose its charm, innocence, and non-violent ways. Current family roles and structure would change as well. The villages to the north of airport relocate and become smaller in future generations with the youth attending higher education and going onto other jobs. Subsistence living will no longer be the typical way of life.

A future that is preserved through this scenario is environmental conservation. São Tomé is a pristine and beautiful place. By using a comprehensive plan, growth will be managed and lands protected. An emerging future is the overextension of too many economic sectors where the island cannot sustain all of them. With massive investments in these sectors, there would be a political hesitancy to redirect investment away from where money has already been spent. The demand for more improvements like infrastructure could be taxing on the administration of the government. With the political reform and action, the country becomes a political leader in Africa in shedding the stigma of a corruptive system.

## A NEW TWIST CONCLUSION

In this scenario, a rich and diverse economy could be the future for STP. Its international airport would expand to meet the needs of this diverse economy. The natural beauty of the islands would be protected and attract future businesses. The scenario also acknowledges other areas that would need to be improved along with the airport to make this scenario a reality.

### Recommendations

1. Preserve land to the south and west by fencing off the area with a chain-linked fence. Existing homes that have been built on the airport land will have to be negotiated for a price and timeframe of when they will need to move. Some of the homes could be used in the future for other airport needs.
2. Begin negotiations with village leaders and private investors to encourage the relocation of villagers. Included in the negotiations would be the installation of the well and other utility improvements until they find a new location and can build their new homes. Also, build an expansion building for the school on the north side that will be converted later to commercial, industrial, or airport use.

3. Work with the Minister of Infrastructure on all plans for the airport campus. Implement the short-term and long-term visions of the airport director's plan for expansion, and obtain funds through foreign investors or foreign aid. With the moderate pace of development, maintain a conservative development plan that does not overextend the governmental funds.
4. Renovate the school buildings to the south of the airport into a training center for the airport.

The following recommendations are for consideration of national politicians and officials:

1. Complete a comprehensive plan for future island development. The plan should include zones for various development areas such as large-scale resorts and eco-tourism sites and natural preservation. This is an excellent opportunity for the University of Illinois, Department of Regional Planning to engage with an additional project (see Appendix E).
2. Adopt national environmental laws to protect specific natural areas and species. Any new large developments would be required to submit impact studies.
3. Complete a political reform that limits the political appointees and improves the transparency of funds expenditures. Implement property rights documentation and legal protection of property rights for both islands.
4. Secure foreign investments for higher education, biological research park, business conference center, and financial district. For education, collaborate with a foreign university to start a campus on the island. For biological research park, attract foreign drug companies. Partner with renewable energy companies in Europe to set up headquarters on the island in order to develop, research, and sell technology to African countries.
5. Secure oil-drilling right funds to improve infrastructure such as roads, seaport, and utilities. Improve water, wastewater, and solid waste facilities to include recycling. Encourage small business ventures in solid waste.



## SCENARIOS REVIEWED

The following two pages provide at-a-glance comparison of the short (figure 54) and long-term (figure 55) land-use in the area surrounding the international airport. The differences are summarized as follows:

### Short-Term:

Within the short-term, each of the four scenarios envisions some degree of growth around the airport campus. The most rapid and extensive development occurs in scenario 1a, Airport Megalith. The airport/government immediately claims land around the airport because they hold the land rights and call for the relocation of the villages to the north of the airport. While more moderate, scenario 3, A New Twist, acquires land for future expansion to the south and west. The villagers to the north are encouraged to relocate through 3rd party sales to airport related functions.

There is no expansion of the airport in both scenarios 1b, A Tale of Two Islands, and 2, Levé, Levé. Growth is seen rather within the residential sector around the airport in the densification of existing villages as well a sprawling expansion to the southwest. In addition, the airport completes minor improvements to buildings, runway, and airport equipment.

### Long-Term:

Within the long-term, the airport campus differences between the scenarios have become magnified. Scenario 1a, Airport Megalith, and 3, A New Twist, have dramatically changed the landscape with the extension of the runway, a new passenger terminal to the west, and various competing developments around the hub that is providing a boost to the island's economy. In both of these scenarios, this has encouraged higher intensity commercial development. While in scenario 1a, the villages to the north of the airfield have been completely displaced, in scenario 3; the villages have been partial displaced more naturally through market forces. In addition, scenario 3 has limited the types of development into zones around the airport campus.

Unlike scenario 1a and 3, the land-use in scenarios 1b, A Tale of Two Islands, and 2, Levé, Levé, remains mostly unchanged with the exception of increased residential density. While expansion has not taken place in scenario 1b, the restriction of development in the area west of the airfield continues to preserve the possibility of airport expansion. The village is allowed to remain, improved with new infrastructure, and is politically recognized. In scenario 2, the airport remains the same size with minor improvements. The airport boundaries remain the same and due to the land rights to the village remain disputed, the village remains.

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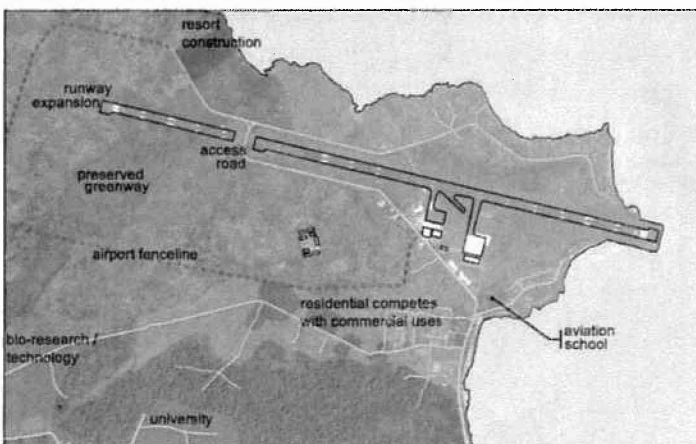
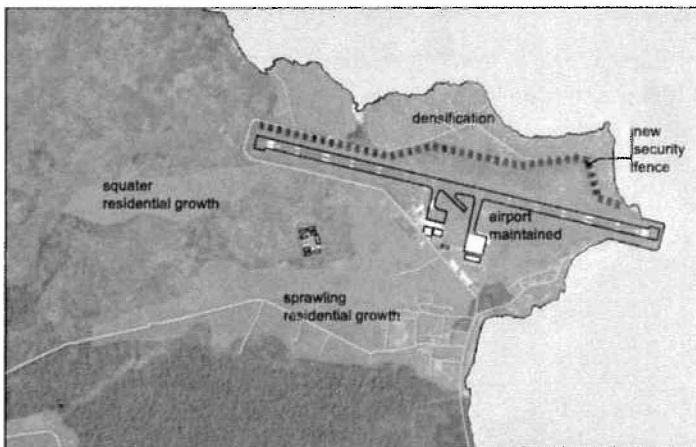
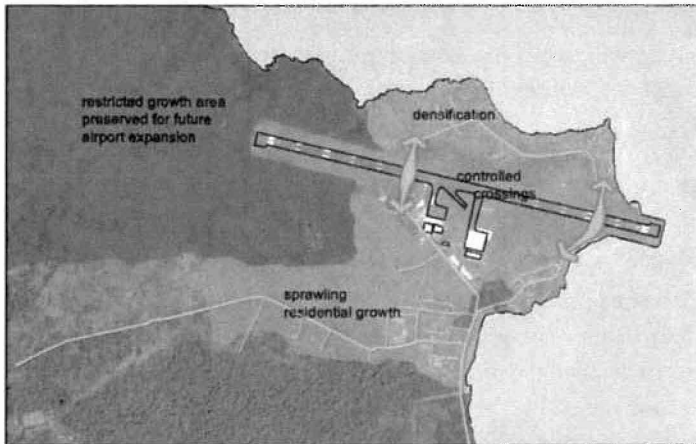
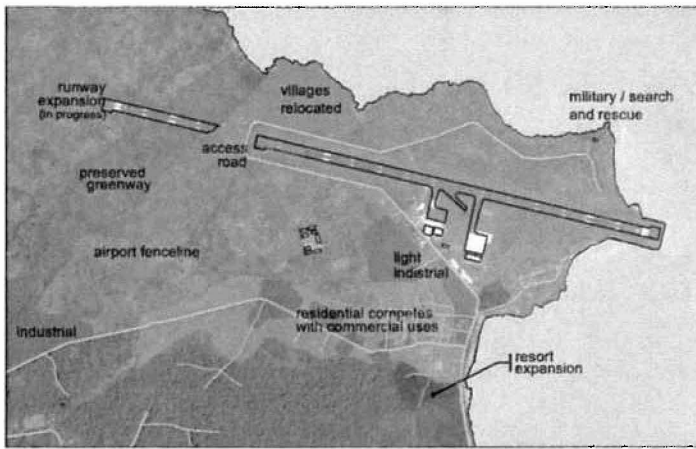
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**Scenario 1a: Airport Megalith: Short-term Change.** That land occupied by the three fishing villages north of the airport have been claimed by the government and the residents displaced. This land has been made available for other government uses that are compatible with the airport. Airport begins to expand the runway.

**Scenario 1b: A Tale of Two Islands: Short-Term Change.** The frequency of air traffic is low enough to allow for continued crossing of the runway by the villagers. While the security measures such as the fence are put in-place, access is allowed in a controlled manner at the two locations shown. This allows for continued growth in the population of these villages without displacement.

**Scenario 2: Levé, Levé: Short-Term Change.** Current conditions persist. Residential areas surrounding the airport expand and densify. Sprawl of residential development continues onto government land unchecked.

**Scenario 3: A New Twist: Short-Term Change.** Villages to the north are provided basic services and the school there is expanded. Access remains to the west while the runway is being expanded. South of the airport, commercial and light industrial development competes with the residential use and the primary school is replaced with an aviation school. Bio-research and educational facilities are co-located in anticipation of the new airport road.



SOURCE ORTHOPHOTOS: GOOGLE EARTH

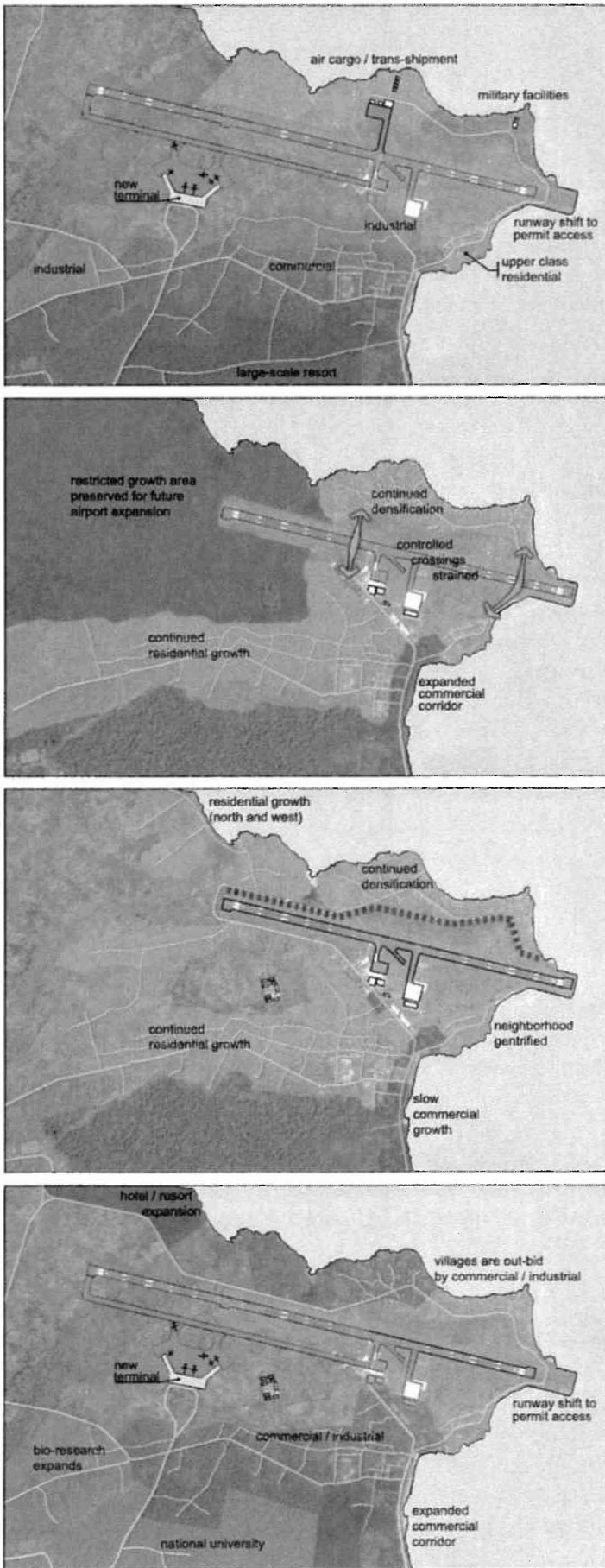
Figure 54: Short-term Change Compared. See figures 23, 31, 39, and 47 for enlarged images.

**Scenario 1a: Airport Megalith, Long-Term Land-Use Projection:** The villages to the north of the airport are quickly displaced in order to make way for airport expansion and other governmental uses. The area to the south of the airport is further commercialized with the construction of the new terminal and access roads.

**Scenario 1b: A Tale of Two Islands, Long-Term Land-Use Projection:** Residential sprawl continues south of the airport as a commercial corridor develops along to the road leading to the airport. The villagers continue to cross the runway in a controlled manner however the frequency this can be allowed is lessening because of increasing air travel.

**Scenario 2: Leve, Leve, Long-Term Land-Use Projection:** Residential sprawl continues on all sides of the airport since regulation fails to create limits. The airport does not increase in size due to lack of government decision making. Commercial growth is slow and relatively stagnant due to lack of policy and program support.

**Scenario 3: A New Twist, Long-Term Land-Use Projection:** The villages in the north are bought-out by commercial and light industrial. The lengthened runway is in-use and access is permitted around the east end. To the south of the airport, the bio-research and university facilities continue to expand while the residential property has completely transformed to commercial and light industrial uses.



SOURCE ORTHOPHOTOS: GOOGLE EARTH

Figure 55: Long-term Change Compared. See figures 24, 32, 40, and 48 for enlarged images.

## VI. CONCLUSIONS:

Sections I - IV presented background information regarding the history and culture of the country of STP, the method: scenario planning, the evolution of the project and the findings. The information included general "known" factors from which assumptions about the effects of the driving forces are drawn. These sections provided a basic understanding of the existing local conditions of the airport and village and national economic, political, social, and environmental conditions, which were used in scenario development to formulate models whose logic expressed their natures. While these sections are far from being comprehensive, it provides a basis and the foundation for which the scenarios in Section V can be discussed. For additional reference material, see Appendix B.

Accurate data collection of driving forces was the largest challenge in completing this work. The team quickly recognized the one-week visit to STP would limit the scope of the project. The team attempted to gather as much information as possible within the limited time-frame. However, even with more time, the team acknowledges that the scenarios would be subjective by our status as *outsiders*. This is why the successful continuation of this scenario planning exercise for the airport campus requires the involvement of the STP stakeholders.

The team identified the interdependence of the airport and the country as a whole. The team stands by the initial conclusion that the small scale of STP makes planning for an airport impossible without considering the impacts on the country as a whole. Likewise, the policy and direction taken by the country as a whole will have a significant part in shaping the size and function of the international airport. It is critical that airport planning be conducted in unison with a wider-based comprehensive plan for the country's economic, social, political, and environmental policies. As illustrated throughout the scenarios, these factors will directly and indirectly determine the physical needs for the airport. The approach taken looked at the larger picture of the country as a whole, identified a corresponding future for the airport, and then looked back at the larger scale impacts for economics, politics, social structure, and environment factors.

### Review and Analysis:

Section V presented four representative scenarios that will help to stimulate discussion about the future. In contrast to a "visioning" exercise, none of the scenarios are meant to predict the future. Rather, they provide illustrations about possible futures with the intention that they are discussed as a set of possibilities. It is unlikely that reality will fit nicely into a single one of these descriptions. Instead, it should be expected that the future will unfold with some qualities from one, a few, or from other new uncertainties. The complex dynamics of STP may initiate scenarios beyond those included in this project, depending on which uncertainties are identified as important and which are considered secondary.

While we were able to learn much about the country from our visit and research, many factors have continued to shape the future since our departure. This includes the threat of worker strikes at the airport, possibilities of a national mass-transit system, and establishment of a foreign military base. These illustrate the need for the continuous discussion and evolution of scenario planning.

### Looking forward:

While this Master's project is completed, the scenario planning process (see Figure 7, page 6) is just beginning. It cannot be over-emphasized that this project did not set out to decide how big the airport should become or whether to move a village. The essential concept behind scenario planning is that it provides a framework to begin discussing what could happen. With this in mind, the next step is to create the involvement of the country's citizens and initiate this discussion about their future. This should include the residents of the villages, airport personnel, along with various government agencies such as the Prime Minister, Minister of Infrastructure, Minister of Education, Minister of Defense, and Minister of Tourism.

Moderating the continuation of this scenario planning exercise would be a good opportunity for University of Illinois. Urban Planning students should continue their engagement with the country of STP. It should however require moderators that are Portuguese speaking (something that none of the team were able to do during this first trip). The team has attempted to capture the way that many of these people see the future unfolding through the use of interviews and detailed research. It should be expected and encouraged for these scenarios to evolve once all of the stakeholders are fully engaged in the process.

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### **Putting plans into reality:**

This document is provided for what the team hopes will be a continuous discussion and effort to plan for the future of STP. The scenarios are provided to help generate discussion about the country's desired future in hopes of resulting in focused plans and policies that will bring their dreams into reality. In advocating the scenario planning process, the team is not suggesting that discussions regarding plausible futures continue indefinitely without a clear decision-making process for creating and implementing plans. Setting the course for the future should be the result of the discussions and deliberation about possible futures. Upon reaching a consensus, a course must be set and the corresponding plans should then align in support. The University of Illinois should be engaged for further involvement in other departments in helping STP reach the plans that they have set in place. See Appendix E for additional opportunities for departments. This resulting plan should set goals and objectives for many of the government's Ministries to form a single effort. For this to be effective, there needs to be longevity of plans. Plans adopted must be utilized for a long enough period in order to experience the long-term goals and be utilized across political party lines.



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## C. TRIP ITINERARY:

30 Jun -Saturday

Arrive

Lunch meeting with Airport Director

Meeting with airport operations consultant

Ambassador's 4th of July Reception

1 Jul -Sunday

Boat trip to view resort development on the north side of the island (Lagoa Azul)

2 Jul -Monday

Meetings with ENASA management (Director, Financial, Technical, and Security)

Meeting with representatives of the villages located to the north of the airport (Praia Cruz, Praia Gamboa, and Praia Loxinga)

3 Jul -Tuesday

Meetings with Civil Aviation personnel

Meeting with Director of Tourism Department

Meeting with the local primary school head master

Continued meeting with representatives of the villages located to the north of the airport (Praia Cruz, Praia Gamboa, and Praia Loxinga)

4 Jul -Wednesday

Meeting with Deputy and tour of roças (plantation)

Visit to Escola Francesco Terreiro; educated students about map reading and the purpose of "Urban and Regional Planning"

5 Jul -Thursday

Meeting with Airport Consultant to discuss potential future projects for University of Illinois architecture students

Tour of São Tomé Seaport Operations

6 Jul -Friday

Driving tour of the island [visit to Neves, Agua Izé, and viewed key development sites]

7 Jul -Saturday

Departure

I. Introduction

II. Framework

III. Approach

IV. Findings

V. Scenarios

VI. Conclusion

VII. Appendix

## D. LIST OF INTERVIEWS:

Jorge Coelho, Airport Director (head of Empresa Nacional de Aeroporto e Segurança Aérea (ENASA))  
Elsa Lombá, ENASA, Financial Administrator  
Arnaldo Pontes, ENASA, Technical Administrator  
Major Fernando Pereira, ENASA, Head of Security  
Pedro Guinarás, ENASA Aerospace Information Service Manager  
José F. Carvalho, President, Aviation Consultant Company  
Mario Menezes de Macedo, Deputy, Parliament (Vice-President), and Instituto Nacional de Aviação Civil (Board Member)  
Antonio Lima, Instituto Nacional de Aviação Civil, Head of Safety  
Marcos Conceição, Instituto Nacional de Aviação Civil, Head of Air Navigation  
Elves Reis, Instituto Nacional de Aviação Civil, Security  
Hugo Menezes, Tourism Department, Director  
Amaro Colos, São Tomé Seaport, Director of Operations  
Afonse da Fonseca, Praia Cruz, Village Leader  
Alvaro Raimond Ferenandes, Head Master of Escola Francesa  
Terreiro and Escola Gamboa  
Ron Hughes, Cape Verde Travel, Eco-tourism Developer  
Batilloi Warritay, UNICEF São Tomé, Deputy Representative  
Tim Parsons, Chevron Texaco JDZ Ltd. São Tomé e Príncipe, Director General  
LT COL Rene P. Dechaine, U.S. Embassy Libreville, Gabon

I. Introduction
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## VII. Appendix

## E. PROJECT OPPORTUNITIES FOR CONTINUED UNIVERSITY ENGAGEMENT

There are many additional project possibilities for students at the University of Illinois. The scale of the country has the benefit of limiting the scope of a single project as well as enabling the students to have a great impact on the country through their efforts. Overall, we see the potential for mutual benefit by the continued involvement of the East St. Louis Action Research Project (ESLARP), the Graduate School of Library and Information Science (GSLIS) and the Department of Urban and Regional Planning (DURP). Examples of possibilities include:

- Urban and Regional Planning
  - Land-use policy development
  - Implementing Geographic Information System (GIS) for planning and infrastructure management
  - Transportation planning
- Education
  - Elementary School to College level instruction
- Civil Engineering
  - Extending the Airport Runway or improving other infrastructure
- Architecture
  - Renovation and Evolving Design of New Airport Terminal
- Agricultural Science
  - Improving their farm management practices

## F. SAMPLE QUESTIONS FOR TRIP

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### VII. Appendix

### What if Questions

#### Environmental/Land Use Regulation

- What would be the impact if strict environmental regulations were enacted and enforced?
  - Is this practical? Is it a possibility?
  - Is there a general awareness (of environmental concerns) and political will to enact?

#### Oil

- What would happen if the projected oil revenues negatively influence the political climate?
  - If the economic/political situation changed due to the affects of oil revenue, how would the change the prospects for investment/development in the area?
- How might the distribution of oil revenues affect social issues?
  - Equity, reinvestment, profitability

#### Tourism

- What would happen if development were to be contingent upon concessions from the developers and/or demonstrated benefits to the population?
- If large scale tourism is dominating the economy, how will local investment and development pressures change?
  - Possible destructive affects of tourism
  - Self destructive nature of success

#### Foreign Investment

- What would happen if foreign interests dominated the political and fiscal decisions in the country? Consider investment as a method of foreign influence.

#### Infrastructure

- How would various infrastructure investment scenarios affect the quality of life for STP residents?
  - Is there an 'official story' regarding the expansion proposal and its benefits?
  - How can STP control the resources to invest in infrastructure that will maximize the quality of life for residents?
- What if private investment does not follow the public investment in infrastructure?

#### Airport

- What would happen if the airport was in a different location?
- What would happen if improvements to the airport were directed only toward fixing immediate needs without planning for the future?

#### Land Rights

- What would happen if it is politically or legally impossible to move the village?
- How would the area change if there was no resistance to moving the village?

### Specific Questions

#### Airport area residents

- History
  - Are there different neighborhoods?
  - Where did people first settle? Why and when did the original villagers move to the current location ("the fishing village")?
  - How many generations live in the village?
  - Can you tell us about how the village has developed? What was it like in the past? How has it changed? (e.g. how many people lived in the village ten years ago?) Is the village working on any projects currently? What does the village need?
  - Is it easier/more difficult to support a family than in the past? What have been the economic changes?
  - What do they think the village will be like in 5, 10, 20 years?



- Village Structure
  - o Does the village have leaders? Are there different leaders for different areas of the village?
  - o What do these leaders do for the village? What types of decisions can be and are made by the village or its leaders?
  - o Are there competing leaders? Or conflicts?
  - o Are there people who organize residents to take on communal issues? (for example, to get basic services provided, water, safety, schools, etc). How does this work?
  - o Do villagers have rights to the land? Do they expect to get more rights in the future? Do they rent/lease the land? And from whom?
- Is it a sense of communal rights, personal rights, ownership, etc.?
- Demographic
  - o How many people live in the village? How many houses? What is the average household size?
  - o Where do the villagers come from (within Sao Tome or from other countries)?
  - o What is the average age of residents? How old are the people living in the village?
  - o Are some families better off than others? What is this based on? Source of income (fishing versus something else) or perhaps year the family moved to the village? Ethnicity?
- Economic System
  - o How do they make a living? What is their livelihood?
  - o Where do they spend most of their money? Where to they trade good/services?
  - o What roles do men and women play in the home, workplace and village life?
  - o Do parents expect their children to continue in the same way of life? What do children expect to do in the future?
  - o Do the villagers grow food/catch fish for consumption and/or to sell at the marketplace? What kinds of foods are grown in the village?
  - o Do villagers make money off the growing tourist economy? If so, how do they participate? If not, do they have ideas about how they might make money?
  - o Is there a vibrant informal economy in the village? (e.g. sewing, home manufacture, craft systems)
- Exogenous connections
  - o Do they have access to health care? For example, if a child is ill, where do they go?
  - o What is the relationship with the city? How often do they typically travel to the city?
  - o What relationship do they have with other villages outside of the city?
- Relationship with the Airport
  - o Would they be happy if the airport was relocated? Why or why not?
  - o Are they bothered by the noise from the airport?
  - o Would it bother them if air traffic increased?
  - o What do they think of the fence? Has the fence impacted how they travel to the other side of the airport?
  - o Do they fear being relocated if the airport expands? How would they respond if they were asked to move? If they had a choice of where to move, where would they go?
- Education
  - o Where do the village children go for education?
  - o Do all children actually go to school?
- Does it differ by the sex of the children?
  - o Do any of the children attend past 6th grade?
- If so, where do they go for further education?
- Visual Survey
  - o Are there qualitative differences suggesting social stratification?
  - o Identify the communal spaces and what does on in those spaces (gardens, well, laundry, etc)
  - o Other places where the villagers congregate socially or for civic activities? Are there different places for men, women and children? Or by any other apparent social differentiation (ethnic, perhaps). What activities occur in these spaces?



- o Are there places of meaning?
- o What types of transportation do they use in the village? to get from the village to the city? And inside the city?
- Bus, walking, biking, boats, car
  - o When are the peak periods of high activity?
- Where are the...?
  - o What is the condition of their houses?
- What materials are they made from? Consider the relationship between the environment and the buildings? Do you see innovations to deal with the weather for example.

#### Airport questions

- What airport improvements/projects have already been agreed on? Who is involved? Conditions? Time frame?
- In the long run, is relocating the airport to another site an option? If they move the airport, what other land is available? Have they considered any other airport locations?
- Funding
  - o What are the sources of funding? How much funding is available to finance airport construction? (which improvements?) Village relocation? Are you negotiating with other funding sources?
  - o Does oil revenue play any role in the airport upgrade? If so, how much are they counting on and when will they see the \$? What do they expect to use this money for? How big of a gamble is this?
  - o How high of a priority is improving the airport in relation to other major public improvement project, for example fixing/constructing new roads on the island?
- Airport Development
  - o What is the rationale for the airport development? Who will benefit from the airport expansion/development?
  - o What is the purpose for expanding? What do you feel is the best way to do it?
  - o Is there any kind of timetables for completing the airport? What is driving this schedule?
  - o Are there alternative runway/extension options? Do you feel it necessary to construct a second runway?
  - o Is the STP military involved? What will happen to the military barracks? Will the building remain or be relocated? Conflicts?
- Land Use Issues
  - o What is the future for the area southeast area of the airport?
  - o Who owns the lands in the vicinity of airport? How many landowners are we talking about?
  - o Do environmental issues play a major role in development plans? What are the major environmental concerns (wetlands)?
  - o What are the issues involved acquiring extra land to expand?
- Has anyone or group voiced opinions for or against the airport expansion/improvements? In what context does this occur? Newspaper, radio, meetings?
- What airport operations take place on the south of the island?

#### Resort Developers / Ministry of Tourism

- Who are the developers? Get names of companies/corporations.
- Is the airport sufficient?
  - o If not, why?
- What makes Sao Tome a tourist attraction?
- Who is the market for their development? (who will stay in the hotel? Who will show at the mall, etc).
- How did they / or will they acquire land?
- What do you see has some of the main challenges for development on the island?
  - o Construction, Labor, Materials, Bureaucracy

## G. ABOUT THE AUTHORS / CONTACT INFORMATION

### *Jay Bieszke*

Jay Bieszke is a Master's student in Urban and Regional Planning at the University of Illinois at Urbana-Champaign. He received a degree in architecture from Ball State University in 1997 and is a Registered Architect in the state of Florida. His work experience includes construction management, contingency planning, and facilities management as well as architectural design. His current interests include economic development and post-disaster planning and redevelopment. Upon completion of his Master's degree in December of 2007, he will be working with United States Navy conducting contingency construction.

### *Matthew Claus*

Matthew Claus is a Master's student in Urban and Regional Planning at the University of Illinois at Urbana-Champaign. He has a Bachelor of Arts degree in Biblical Studies and Theology from Moody Bible Institute. Matthew has years of experience working along side and leading community volunteers in both Canada and the United States. His has interests in advocacy planning and international planning for relief and development.

### *Eric Hansen*

Eric Hansen is a Master's student in Urban and Regional Planning at the University of Illinois at Urbana-Champaign. He holds a B.S. in Political Science from Illinois State University and a Culinary Arts degree from New England Culinary Institute. He is currently a research assistant with the Land Use Evolution and Impact Assessment Model (LEAM), a Leadership in Environmental Energy Design (LEED) Accredited Professional, plays guitar in Uumellmahaye, enjoys playing "Santa and the Pirate" with his son Oskar, and is interested in pursuing a consulting career focusing on sustainability issues in land use planning.

### *Andrew Jensen*

Andrew Jensen is a Master's student in Urban and Regional Planning at UIUC and has a concentration in International Planning. He has worked on research projects addressing municipal and colonial government in historical Cape Town, South Africa and immigrant housing in rural Midwest communities. His other interests include economic development and sustainability in planning. He received a degree in Community and Regional Planning from Iowa State University in 2005, and worked as a Transportation Planner before beginning graduate work at UIUC.

### *Bridgette Richardson*

Bridgette Richardson is a recent graduate with a dual Masters in Architecture and Civil and Environmental Engineering. In addition to working on this project, she aided the Graduate School of Library and Information Science students in their attempts to set up a wireless network throughout the island as well as scouting out other projects that would be relevant for other architectural or engineering students to become involved in. Being previously employed as project coordinator for the East St. Louis Action Research Project, she acted as a liaison with this organization. After becoming a Leadership in Environmental Energy Design (LEED) accredited professional this summer, her main interest is to pursue a career focusing on sustainable design in architecture.

### *Angela Stenson*

Angela is a Master's student in Urban and Regional Planning at the University of Illinois at Urbana-Champaign where she has focused her studies on community and international development. This project allowed her to better understand another culture, work as a team to address planning issues, and create a useful planning document. She graduated from North Dakota State University in 2005 with a Bachelor's of Science in Sociology and minors in Community Development and Emergency Management. She plans on graduating from the University of Illinois at Urbana-Champaign with a Master's in Urban and Regional Planning in May, 2008. Additional interests include traveling, languages, and soccer.

### *Joel VanEssen*

Joel VanEssen is a Master's student in Urban and Regional Planning at the University of Illinois at Urbana-Champaign. He received a degree in architecture from the University of Illinois in Chicago in 1996 and is a registered architect in the state of Illinois. As a young child, he grew up Nigeria while his father served as a missionary. His work experience includes construction management, facilities management, architectural design and planning. His current interests include community development and urban design. Upon completion of his Master's degree in December of 2007, he will be working for the Assistant Secretary of the Navy for Installations and Environment.

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